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ABSTRACT

Using data from the 1999 National Study of Postsecondary Faculty (NSOPF:99), this study examined the characteristics and roles of teachers of undergraduate students. The findings are based on a nationally representative sample of postsecondary faculty and instructional staff. In fall 1998, U.S. colleges and universities employed about 1.1 million faculty and instructional staff. Of these, about 976,000 (91%) were identified as instructional faculty and staff with some for-credit instructional responsibilities. The majority (85%) were involved in undergraduate teaching, and classroom instruction was the most common type of teaching. Overall, instructional faculty and staff at four-year doctoral institutions were less likely to provide instruction to undergraduates than were their colleagues at four-year nondoctoral and two-year institutions. In fall 1998, about 71% of undergraduate credit hours across all types of institutions were assigned to full-time faculty and instructional staff. Analysis of the faculty-level data did not show that part-time faculty had a higher likelihood of teaching undergraduates than their full-time colleagues. Faculty with a lower degree were generally more likely than those with a doctoral or first-professional degree to teach undergraduate classes and to teach them exclusively. The analysis of faculty time allocation indicated that undergraduate teaching remains the primary focus of postsecondary instructional faculty and staff. Information is provided about other teacher characteristics and teaching practices. Appendixes contain a glossary and technical notes. (Contains 28 tables, 7 figures, and 17 references.) (SLD)

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Teaching Undergraduates in U.S. Postsecondary Institutions: Fall 1998

Statistical Analysis Report

U.S. Department of Education
Office of Educational Research and Improvement
NCES 2002-209

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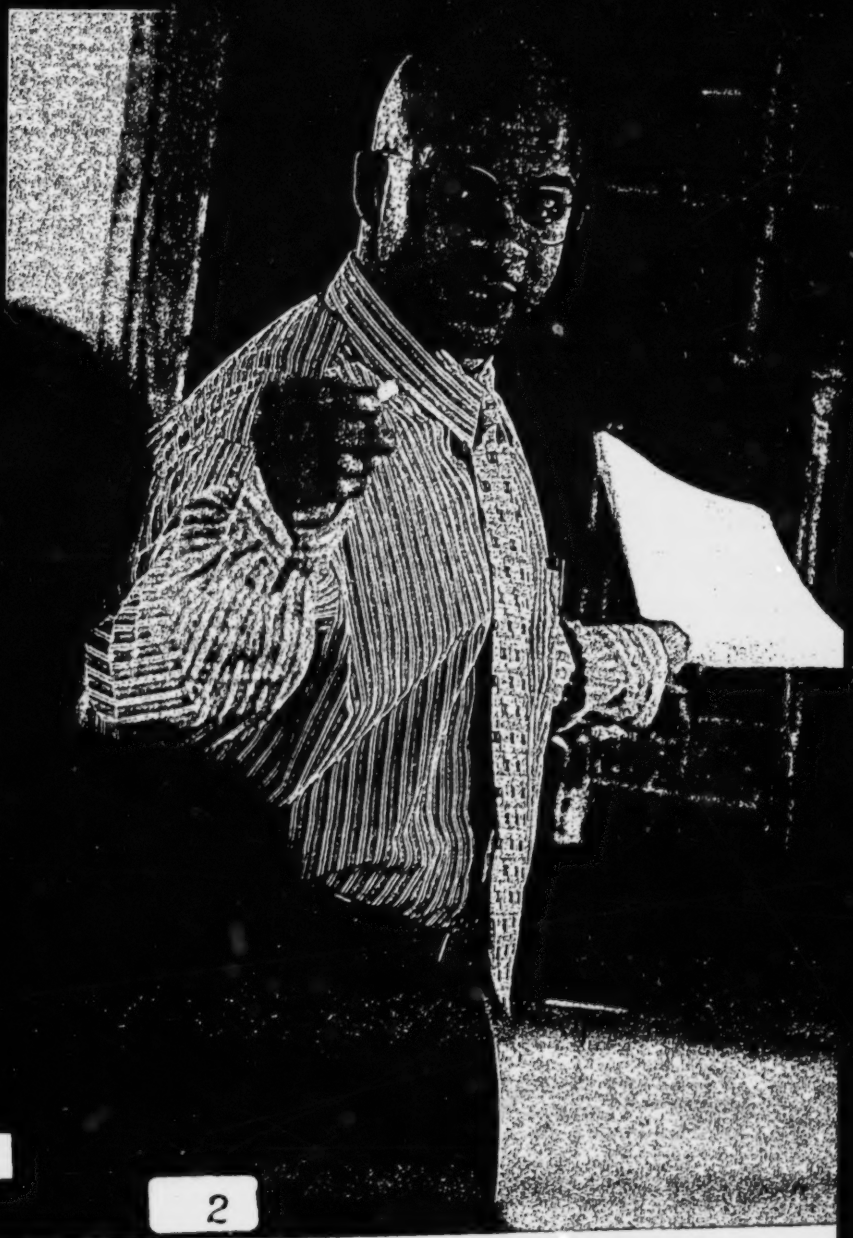

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Teaching Undergraduates in U.S. Postsecondary Institutions: Fall 1998

Statistical Analysis Report

August 2002

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Executive Summary

For some years now, the quality of undergraduate education has been one of the major concerns of public and private postsecondary institutions, state legislatures, the business community, parents, and students (Kerr 1994; Winston 1994). At the heart of this concern lies the issue of "who teaches undergraduates in postsecondary institutions" (Boyer Commission 1998). Although some research has been conducted to address this issue (Chen 2000; Middaugh 1999; Townsend 2000), current descriptive information regarding who teaches undergraduates at postsecondary institutions in the United States is limited. Using the most current national survey of faculty, the 1999 National Study of Postsecondary Faculty (NSOPF:99),[1] this report supplies such information by addressing the following three questions: 1) Who teaches undergraduates in postsecondary institutions?[2] 2) How much do they teach? and 3) what teaching practices do they use for their undergraduate teaching? The findings, which are summarized below, are based on a nationally representative sample of postsecondary faculty and instructional staff who reported having some instructional responsibilities for credit in fall 1998.

Who Teaches Undergraduates?

In fall 1998, U.S. colleges and universities employed about 1.1 million faculty and instructional staff. Of these, about 976,000 (91 percent) were identified as instructional faculty and staff who had some for-credit instructional responsibilities, including teaching classes for credit or advising or supervising students about academic activities for credit. These individuals were the core sample for this report. Throughout this report, faculty and staff who had some for-credit instructional responsibilities are called "instructional faculty and staff" or simply "faculty."

Overall pattern. In fall 1998, a majority of instructional faculty and staff were involved in undergraduate teaching: 85 percent reported being engaged in some kinds of undergraduate teaching activities,[3] and 83 percent reported providing at least one type of instruction to undergraduates, which could include for-credit classroom instruction, individual instruction,[4] and academic committee work[5] (figure A).

[1]Sponsored by the U.S. Department of Education's National Center for Education Statistics (NCES), NSOPF:99 was conducted in 1999 and asked a nationally representative sample of faculty and instructional staff about their employment and work activities in fall 1998.

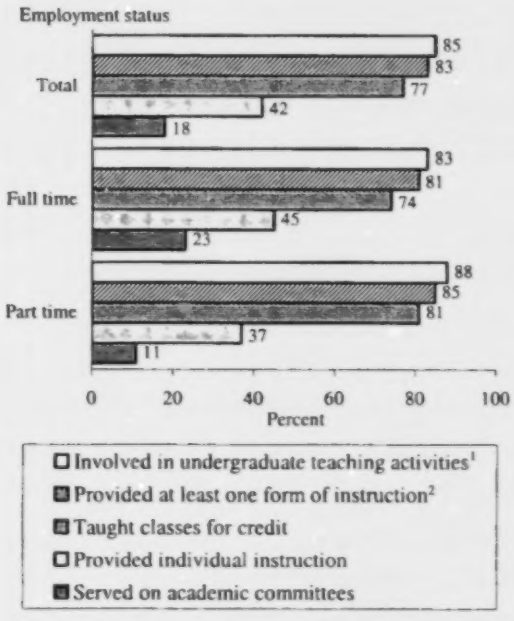
[2]Using teaching assistants for undergraduate instruction has become increasingly common in many postsecondary institutions and has recently received much attention from the media (Robin 1999). However, there is little information available concerning the extent to which teaching assistants are being used. Although NSOPF:99 is a survey of faculty (i.e., it did not include teaching assistants in its sample), it did ask several questions about teaching assistants (e.g., whether faculty had teaching assistants in their classes; what percentage of undergraduate student credit hours were assigned to teaching assistants). These questions allowed some analysis of teaching assistants in this report.

[3]"Undergraduate teaching activities" were defined broadly and included teaching classes, grading papers, preparing courses, developing new curricula, advising or supervising students, supervising student teachers and interns, and working with student organizations or intramural athletics.

[4]Examples of individual instruction include independent study, supervising student teachers or interns, or one-on-one instruction, such as working with individual students in a clinical or research setting.

[5]Examples of undergraduate academic committees include thesis honors committees, comprehensive exams or orals committees, and examination/certification committees.

Figure A.—Percentage of instructional faculty and staff in postsecondary institutions who were involved in undergraduate instruction, by type of instruction and employment status: Fall 1998



[1]"Undergraduate teaching activities" were defined broadly in the survey and included teaching classes, grading papers, preparing courses, developing new curricula, advising or supervising students, supervising student teachers and interns, and working with student organizations or intramural athletics.

[2]Including classroom instruction, individual instruction, and academic committee work.

NOTE: This figure includes all instructional faculty and staff.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty, 'Faculty Survey' (NSOPF:99).

While there were different ways of delivering instruction to undergraduates, classroom teaching was the most common: in fall 1998, 77 percent of instructional faculty and staff reported teaching at least one undergraduate class for credit,[6] compared with 42 percent who provided individual instruction and 18 percent who served on academic committees. This pattern held true for both full- and part-time faculty (figure A).[7]

Variation across type of institutions. Overall, instructional faculty and staff at 4-year doctoral institutions were less likely to provide instruction to undergraduates than were their colleagues at 4-year nondoctoral and 2-year institutions. Two-thirds (67 percent) of full-time faculty at 4-year doctoral institutions reported providing at least one type of instruction to undergraduates, compared with 90 percent of their counterparts at 4-year nondoctoral institutions and 98 percent of those at 2-year institutions. Among full-time faculty who taught classes at any level, 69 percent of those at 4-year doctoral institutions reported teaching at least one undergraduate class and 44 percent reported teaching such classes exclusively, again lower than the percentages for their counterparts at 4-year nondoctoral institutions (90 percent and 74 percent, respectively).

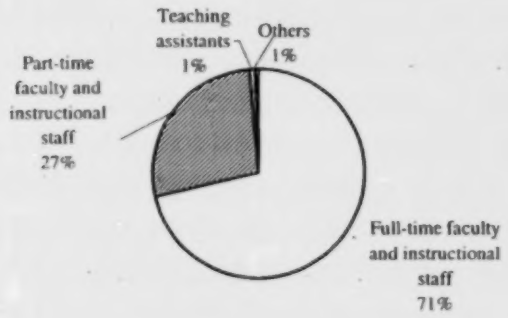
Use of part-time faculty and teaching assistants. One issue of great concern to students, parents, administrators, state legislators, and the general public is the use of part-time faculty and teaching assistants to teach undergraduate courses (Cox 2000). Figure B presents NSOPF:99 data collected from institutions regarding the percentage distribution of undergraduate student credit hours assigned to various types of faculty and staff.[8] In fall 1998, about 71 percent of undergraduate credit hours across all types of institutions were assigned to full-time faculty and instructional staff, a considerably higher percent

[6]The term "for credit" may be omitted for brevity throughout this report, but all classes examined are for credit.

[7]The terms "full time" and "part time" in this report refer to the employment status of the person at the sampled institution rather than the amount of time devoted to instruction.

[8]Note that this percentage distribution represents the institutions' estimates concerning undergraduate credit hours assigned to various groups of faculty and staff rather than those of faculty members who reported actually teaching undergraduate classes in fall 1998.

Figure B.—Percentage distribution of undergraduate student credit hours assigned to various types of faculty and staff: Fall 1998


Teaching assistants 1%
Others 1%
Part-time faculty and instructional staff 27%
Full-time faculty and instructional staff 71%

NOTE: This figure includes all Title IV degree-granting institutions. The percentage distribution represents institutions' estimates of undergraduate credit hours assigned to various groups of faculty and staff rather than those of faculty members who reported actually teaching undergraduate classes in fall 1998.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty, (NSOPF:99), "Institution Survey."

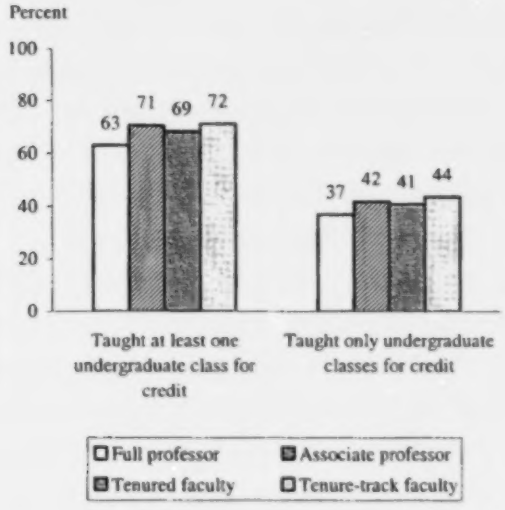
age than that assigned to part-time faculty (27 percent) and teaching assistants and other staff (1 percent for each group).

Furthermore, the analysis of the faculty-level data did not find that part-time faculty had a higher likelihood of teaching undergraduate students than their full-time colleagues. For example, at 4-year doctoral institutions, there was no difference found between part- and full-time faculty in terms of their percentages of being engaged in undergraduate teaching activities (69 percent and 70 percent, respectively) or teaching at least one undergraduate class (58 percent and 57 percent, respectively). At 4-year nondoctoral institutions, part-time faculty were even less likely than full-time faculty to report providing at least one type of instruction to undergraduates (85 percent vs. 90 percent, respectively) and, in particular, teaching undergraduate classes (80 percent vs. 86 percent, respectively).

Involvement of senior faculty teaching undergraduates. One indicator that might be of interest to researchers, students, and parents is the proportion of senior faculty members (i.e., full professors and tenured faculty), particularly those at research and doctoral institutions, who teach undergraduates. Figure C presents this information for 4-year doctoral institutions. Among full-time instructional faculty and staff who taught one or more classes at 4-year doctoral institutions in fall 1998, 63 percent of full professors reported teaching at least one undergraduate class and 37 percent of them reported teaching such classes exclusively. About 69 percent of full-time tenured faculty at 4-year doctoral institutions reported teaching at least one undergraduate class and 41 percent of them reported that all of their classes were at the undergraduate level.

Characteristics of faculty who taught undergraduate classes. There was considerable variation among postsecondary instructional faculty and staff regarding the extent to which they taught undergraduates. For example, among both part- and full-time instructional faculty and staff who taught classes at 4-year doctoral institutions, instructors/lecturers were more likely than assistant, associate, or full professors to teach undergraduate classes, and to teach such classes exclusively (table A). Faculty with a lower degree (e.g., a bachelor's or lower degree) were generally more likely than those with a doctoral or first-professional degree to teach undergraduate classes and to teach them exclusively.

Figure C.—Of full-time instructional faculty and staff who taught classes for credit at 4-year doctoral institutions, percentage who taught at least one undergraduate class for credit and percentage who taught only undergraduate classes for credit, by academic rank and tenure status: Fall 1998



NOTE: This figure includes only full-time instructional faculty and staff who taught one or more classes for credit at 4-year doctoral institutions. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty, (NSOPF:99), "Faculty Survey."

At 4-year doctoral institutions, part-time faculty were more likely than full-time faculty to indicate that all of their classes were at the undergraduate level, although no difference was found between the two groups regarding teaching at least one undergraduate class. In addition, at 4-year doctoral institutions, nontenure-track faculty were more likely than tenured faculty to report teaching undergraduate classes exclusively. There was also variation across teaching fields. At 4-year doctoral institutions, both full- and part-time faculty in the humanities were more likely than average to report teaching undergraduate classes and teaching such classes exclusively, whereas those in the health sciences were less likely to do so.

Independent relationship of specific variables to teaching undergraduate classes. Most relationships described above remained after taking into consideration various academic and demographic characteristics of instructional faculty and staff. Specifically, after controlling for principal field of teaching, employment status, academic rank, highest degree, gender, race/ethnicity, and age, faculty at 4-year doctoral institutions were still less likely to teach undergraduate classes and to teach such classes exclusively than were their colleagues at 4-year nondoctoral institutions.[9] In addition, when other faculty characteristics were held constant, full professors were less likely to teach undergraduate classes or teach such classes exclusively than were instructors/lecturers. Faculty with a doctoral or first-professional degree were also less likely to do so than those with only a bachelor's or master's degree.

How Much Do Faculty Teach?

Time allocated to undergraduate teaching activities. The analysis of faculty time allocation indicated that undergraduate teaching remained the primary focus of postsecondary instructional faculty and staff. In fall 1998, instructional faculty and staff across all types of institutions devoted

[9]When taking into consideration a number of academic and demographic variables, these variables accounted for 18 percent of the variance in faculty teaching at least one undergraduate class and 21 percent of the variance in faculty teaching undergraduate classes exclusively. Bivariate correlations showed that the effect sizes of the independent variables on faculty teaching at least one undergraduate class or teaching undergraduate classes exclusively were small to moderate, with correlations ranging in absolute value from .004 to .285. The most important factor in accounting for the variance was type of institution, with a correlation of -.230 with faculty teaching at least one undergraduate class and -.285 with faculty teaching undergraduate classes exclusively. See appendix B for methodological details.

Table A.—Of instructional faculty and staff who taught classes for credit at 4-year doctoral institutions, percentage who taught at least one undergraduate class for credit and percentage who taught only undergraduate classes for credit, by employment status and academic characteristics of instructional faculty and staff: Fall 1998

Academic characteristics of instructional faculty and staff	Taught at least one undergraduate class for credit		Taught only undergraduate classes for credit	
	Part time	Full time	Part time	Full time
Total	69.6	68.6	59.5	43.9
Academic rank*				
Full professor	48.5	63.3	34.2	37.1
Associate professor	59.7	70.9	41.3	42.0
Assistant professor	46.7	68.6	34.0	44.0
Instructor or lecturer	79.7	83.1	70.6	71.0
Tenure status				
Tenured	59.9	68.7	50.6	40.9
On tenure track	(#)	71.6	(#)	43.7
Not on tenure track	71.4	66.7	61.7	54.1
No tenure system	54.7	49.6	41.8	24.6
Highest degree obtained				
Doctoral/first-professional degree	55.5	65.6	42.9	39.7
Master's	81.7	85.5	74.0	68.0
Bachelor's or less	88.0	81.0	80.5	68.1
Principal field of teaching				
Agriculture and home economics	(#)	87.4	(#)	65.7
Business	74.0	78.8	67.8	47.6
Education	65.2	65.7	46.3	29.3
Engineering	62.7	77.7	50.9	45.3
Fine arts	93.5	89.3	84.9	58.8
Health sciences	37.8	37.2	25.6	19.6
Humanities	94.2	92.4	91.4	67.1
Natural sciences	88.1	68.1	74.8	45.0
Social sciences	73.7	79.2	62.3	53.1
All other programs	57.4	60.4	47.9	39.0

#Too small to report.

*Included in the total but not shown separately were those with other or no academic rank.

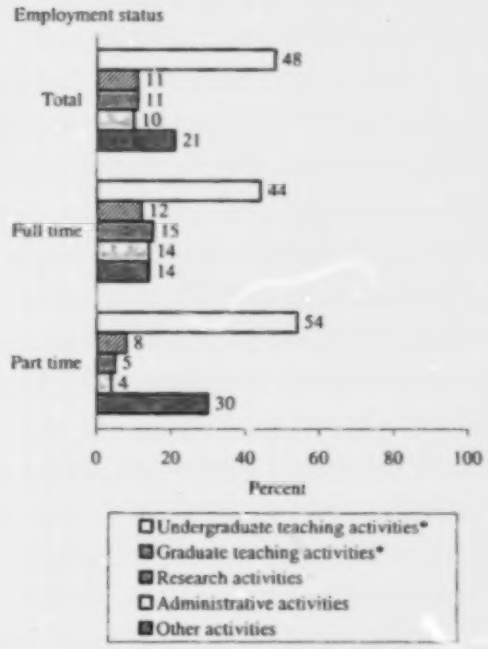
NOTE: This table includes only instructional faculty and staff who taught classes for credit at 4-year doctoral institutions. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

nearly one-half of their work time (48 percent) to undergraduate teaching activities, a higher percentage than that devoted to graduate teaching activities (11 percent), research (11 percent), administrative tasks (10 percent), and all other tasks (21 percent) (figure D). Similar patterns were observed among full- and part-time faculty.

However, faculty with a higher academic rank spent more of their time on research and graduate teaching activities and less of their time on undergraduate teaching activities than their junior colleagues. For example, at 4-year doctoral institutions, full-time full professors spent 48 percent of their work time on research and graduate teaching activities, a higher percentage than that spent by full-time instructors/lecturers (22 percent) (figure E). Conversely, full-time instructors/lecturers spent one-half of their work time on undergraduate teaching activities, compared with the 21 percent spent by full-time full professors.

Figure D.—Percentage distribution of time spent on various work activities by instructional faculty and staff, by employment status: Fall 1998

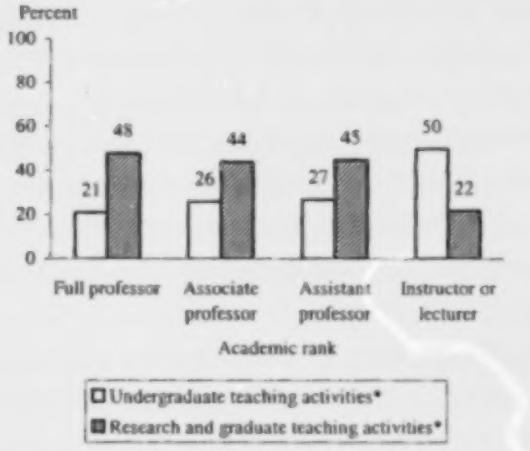


*"Teaching activities" were defined broadly in the survey and included teaching classes, grading papers, preparing courses, developing new curricula, advising or supervising students, supervising student teachers and interns, and working with student organizations or intramural athletics.

NOTE: This figure includes all instructional faculty and staff at Title IV degree-granting institutions. Percentages may not add to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Figure E.—Percentage of time spent by full-time instructional faculty and staff at 4-year doctoral institutions on undergraduate teaching activities and on research and graduate teaching activities, by academic rank: Fall 1998



*"Teaching activities" were defined broadly in the survey and included teaching classes, grading papers, preparing courses, developing new curricula, advising or supervising students, supervising student teachers and interns, and working with student organizations or intramural athletics.

NOTE: This figure includes only full-time instructional faculty and staff at 4-year doctoral institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Undergraduate teaching loads. In fall 1998, full-time postsecondary faculty who taught at least one undergraduate class taught an average of three undergraduate classes (worth approximately 10 credit hours), with a total of 86 undergraduate students in these classes (table B). They spent about 11 hours each week teaching undergraduates in class and generated a total of 309 undergraduate student classroom contact hours.[10] Most of these faculty members (77 percent) lacked a teaching assistant for their undergraduate classes.

Teaching loads varied among those who did some undergraduate teaching. In general, instructional faculty and staff at 4-year doctoral institutions had lighter teaching loads than those at 4-year nondoctoral institutions, who in turn had lighter loads than those at 2-year institutions. At the same time, instructional faculty and staff at 4-year doctoral institutions were more likely than their colleagues at 4-year nondoctoral and 2-year institutions to have teaching assistants in some or all of their undergraduate classes.

With some exceptions, undergraduate teaching loads at 4-year institutions were inversely related to faculty's academic rank and tenure status. Instructional faculty and staff with higher academic ranks or tenure status (e.g., full professors or tenured faculty) generally had lighter teaching loads than those with lower academic ranks and tenure status (e.g., instructors/lecturers or nontenure-track faculty). This relationship was more apparent at 4-year doctoral institutions than at 4-year nondoctoral institutions.

[10]Undergraduate student classroom contact hours were calculated as follows: For each undergraduate class taught (a maximum of five classes could be reported by respondents), the number of hours per week spent teaching the class was multiplied by the number of students in the class. The products were then summed to obtain the total number of undergraduate student classroom contact hours.

What Kinds of Teaching Practices Do Faculty Use in Their Undergraduate Classes?

Instructional faculty and staff with classroom teaching duties were asked about their use of various methods—lecture/discussion, seminar, lab/clinic, and apprenticeship/field work—as primary teaching methods in their classes. According to their responses, the predominant teaching method for undergraduate classes was lecture/discussion. In fall 1998, 83 percent of instructional faculty and staff who taught undergraduate classes reported using lecture/discussion in at least one of their undergraduate classes (table C). Compared with lecture/discussion, faculty less frequently relied on other teaching methods as primary methods in at least one of their undergraduate classes: 21 percent of faculty used labs or clinics, 11 percent used seminars, and only 5 percent used field work, such as internships and apprenticeships. This pattern held true among both full- and part-time faculty.

Instructional faculty and staff also used a variety of methods to make assignments, assess students, and grade students' performance. In fall 1998, 60 percent of instructional faculty and staff who taught at least one undergraduate class indicated that they assigned term/research papers in some or all of their undergraduate classes; 44 percent asked students to evaluate each other's work; and 40 percent asked students to submit multiple drafts of written work. To assess students, 62 percent used short-answer midterm or final exams in some or all of their undergraduate classes; 60 percent used essay exams; and 58 percent used multiple-choice exams. To grade students' performance in some or all of their undergraduate classes, instructional faculty and staff were more likely to report using competency-based grading than

Table B.—Undergraduate teaching loads of full-time instructional faculty and staff who taught at least one undergraduate class for credit, by type of institution, academic rank, and tenure status: Fall 1998

Type of institution, academic rank, and tenure status	Number of undergraduate classes taught for credit	Number of undergraduate classroom credit hours	Hours per week spent in the classroom teaching undergraduates	Number of undergraduates taught in the classroom	Number of undergraduate classroom contact hours[1]	Percentage who had teaching assistants in some/all undergraduate classes
Total	3.0	10.4	10.9	86.0	309.0	22.7
4-year doctoral	2.1	7.5	7.1	83.3	268.6	38.2
Academic rank[2]						
Full professor	1.9	6.2	5.9	83.9	256.7	43.8
Associate professor	2.1	6.9	6.9	75.5	233.0	35.0
Assistant professor	2.1	7.1	7.3	74.0	254.5	35.6
Instructor or lecturer	3.0	13.4	10.9	122.7	418.7	35.4
Tenure status						
Tenured	2.0	6.5	6.3	81.3	249.4	40.7
On tenure track	2.1	6.8	7.1	71.4	234.9	37.7
Not on tenure track	2.6	10.9	9.4	102.4	362.7	32.7
No tenure system	(#)	(#)	(#)	(#)	(#)	(#)
4-year nondoctoral	3.1	9.8	10.5	78.9	277.4	16.0
Academic rank[2]						
Full professor	2.9	9.1	9.8	75.9	259.8	18.0
Associate professor	3.1	10.0	10.5	81.0	287.2	13.9
Assistant professor	3.3	10.4	11.6	82.3	285.0	15.7
Instructor or lecturer	3.0	9.9	10.5	80.0	303.3	15.7
Tenure status						
Tenured	3.0	9.6	10.1	81.3	274.3	16.4
On tenure track	3.2	9.8	10.8	76.7	262.0	15.3
Not on tenure track	2.9	8.9	9.8	74.9	253.9	15.1
No tenure system	3.3	12.3	13.0	78.0	365.0	16.8
2-year	4.0	15.5	17.0	102.3	418.6	12.0
Academic rank[2]						
Full professor	4.0	14.6	15.7	108.5	415.5	12.5
Associate professor	3.8	14.2	15.2	101.9	399.4	12.1
Assistant professor	4.1	13.9	15.7	108.3	419.1	13.5
Instructor or lecturer	4.2	17.6	20.0	99.4	453.8	12.1
Tenure status						
Tenured	4.0	16.2	17.0	109.8	439.2	12.5
On tenure track	4.1	14.6	15.9	104.0	391.9	11.5
Not on tenure track	3.3	12.9	13.7	79.2	335.0	16.3
No tenure system	4.0	15.2	18.5	93.0	415.0	10.2

#Too small to report.

[1]For each for-credit undergraduate class taught (a maximum of five classes could be reported by respondents), the number of hours per week spent teaching the class was multiplied by the number of students in the class. The products were then summed to obtain the total number of undergraduate student classroom contact hours.

[2]Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes only instructional faculty and staff who taught at least one undergraduate class for credit. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Table C.—Of instructional faculty and staff who taught undergraduate classes for credit, percentage who used various teaching practices in at least one of their undergraduate classes, by employment status: Fall 1998

Instructional method	Total	Full time	Part time
Primary instructional method*			
Lecture/discussion	83.1	87.0	78.2
Seminar	11.2	13.4	8.5
Lab/clinic	21.4	23.5	18.9
Apprenticeship/field work	4.7	5.4	3.8
Assignment method			
Student evaluations	44.2	44.8	43.5
Term/research papers	60.4	64.6	55.2
Multiple written drafts	39.5	42.7	35.5
Assessment method			
Multiple-choice exams	57.9	56.7	59.4
Short-answer exams	62.2	64.1	59.8
Essay exams	59.8	63.1	55.7
Grading methods			
Grading on a curve	29.7	31.8	27.2
Competency-based grading	60.6	59.8	61.6

*A maximum of five classes could be reported by respondents regarding the primary instructional method used in their classes.

NOTE: This table includes only instructional faculty and staff who taught undergraduate classes for credit.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

grading on a curve to assess students' performance (61 percent vs. 30 percent).

While lecture/discussion was popular, faculty's use of other instructional methods was related to their teaching disciplines. For example, at 4-year doctoral institutions, full-time faculty in the fine arts (32 percent) and health sciences (30 percent) were more likely than average (16 percent) to use labs/clinics as their primary instructional method in one or more of their undergraduate classes, while their colleagues in the humanities (4 percent), business (7 percent), and social sciences (7 percent) were less likely to do so. Full-time faculty in the health sciences (11 percent) were more likely than their colleagues in business, humanities, natural sciences, and social sciences (1 percent to 2 percent) to use apprenticeship/field work as the primary method of teaching.

Conclusions

This report indicates that a majority of instructional faculty and staff were involved in some kinds of undergraduate teaching activities in fall 1998, and that most provided direct instruction to undergraduates. This finding held true in all types of institutions examined in this report. Furthermore, according to institution reports, part-time faculty and teaching assistants were assigned a relatively small share of undergraduate credit hours (27 percent for part-time faculty and 1 percent for teaching assistants). Full-time faculty, with 71 percent of undergraduate credit hours, still

constituted the major group in undergraduate teaching in fall 1998.

This report also reveals that a majority of full-time senior faculty members (i.e., full professors or tenured faculty), including those at 4-year doctoral institutions, taught at least one undergraduate class in fall 1998. About 40 percent of full-time senior faculty who had classroom instruction responsibilities at 4-year doctoral institutions reported teaching undergraduate classes exclusively.

There were, however, variations regarding those who taught undergraduates and how much they taught. First, whether or not faculty taught undergraduates was related to the role and mission of the institution. Instructional faculty and staff at 4-year doctoral institutions were less likely than their colleagues at 4-year nondoctoral and 2-year institutions to teach undergraduates and also had lighter teaching loads if they did teach. Second, within institutions, especially 4-year doctoral institutions, undergraduate teaching behaviors were somewhat related to faculty's seniority. Compared with junior faculty, senior faculty were less likely to teach undergraduates, and if they did, they typically had lighter teaching loads and also were more likely to have teaching assistants.

Foreword

This report provides descriptive information about instructional faculty and staff who taught undergraduates in U.S. postsecondary institutions in fall 1998. Using a nationally representative sample of instructional faculty and staff from the 1999 National Study of Postsecondary Faculty (NSOPF:99), the report first addresses the question of "who teaches undergraduates" by identifying demographic and academic characteristics of instructional faculty and staff who taught undergraduates. It then goes on to examine the undergraduate teaching loads of those who provided classroom instruction to undergraduates. Finally, the report looks at various teaching practices that faculty used for their undergraduate classes.

This report uses data from the 1999 National Study of Postsecondary Faculty (NSOPF:99). NSOPF:99 is the third cycle of data collections on postsecondary faculty conducted by the National Center for Education Statistics (NCES). Previous collections were conducted for 1987–88 and 1992–93. The estimates presented in this report were produced using the NCES Data Analysis System (DAS), a microcomputer application that allows users to specify and generate tables, for the NSOPF:99 study. The DAS produces the design-adjusted standard errors necessary for testing the statistical significance of differences in the estimates. For more information on the DAS, readers should consult appendix B of this report.

This report is one of many reports based on NSOPF:99 data that are currently underway or planned. Topics of other reports include: teaching with technology; minority and women faculty; part-time faculty; retirement and other departure plans of faculty; changes in the racial/ethnic and gender make-up of faculty; and changes in the tenure status of faculty. For access to these reports as they become available, go to the NSOPF Web Site at *http://nces.ed.gov/surveys/nsopf* or sign up for the NCES News Flash Subscription Service at *http://nces.ed.gov/newsflash/*, which will notify you as each report becomes available.

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Introduction

For some years now, the quality of undergraduate education has been one of the major concerns of public and private postsecondary institutions, state legislatures, the business community, parents, and students (Cole 1994; Kerr 1994; Winston 1994). At the heart of this concern lies the issue of "who teaches undergraduates in postsecondary institutions" (Boyer Commission 1998; Middaugh 1999; Townsend 2000). In 2000, the U.S. Department of Education's National Center for Education Statistics (NCES) released the first report that examined the extent to which postsecondary instructional faculty and staff were involved in undergraduate education (Chen 2000). Based on a nationally representative sample of faculty from the 1993 National Study of Postsecondary Faculty (NSOPF:93), this report found that in fall 1992, a majority of instructional faculty and staff provided classroom instruction to undergraduates. Moreover, most full-time full professors or tenured faculty with classroom instructional duties did some undergraduate teaching. At 4-year doctoral institutions, for example, nearly two-thirds of full-time full professors and tenured faculty with classroom instructional duties reported teaching at least one undergraduate class for credit, and about 40 percent of these faculty members reported teaching such classes exclusively. While the level of involvement in undergraduate teaching was generally high, the report also found that some faculty members were less likely than others to teach undergraduate classes. For example, instructional faculty and staff at 4-year doctoral institutions were less likely than their colleagues at 4-year nondoctoral and 2-year institutions to teach undergraduates. At 4-year institutions, instructional faculty and staff who held a lower academic rank such as instructor or lecturer and had a highest degree below a doctoral or professional degree were more likely than their counterparts to teach undergraduate classes and to teach such classes exclusively.

Since the publication of this report, data collected from the 1999 National Study of Postsecondary Faculty (NSOPF:99) have become available. Designed to provide a national profile of faculty and instructional staff who were employed in degree-granting U.S. postsecondary institutions in fall 1998, this survey provides an opportunity to re-examine faculty's involvement in undergraduate education. Thus, using NSOPF:99, the purpose of the current report is twofold: to update the findings revealed in the earlier report described above and to examine some of the issues that were not investigated earlier (e.g., various instructional methods used for undergraduate teaching). Specifically, the current report addresses the following questions: 1) Who teaches undergraduates in U.S. postsecondary institutions? 2) How much do they teach? and 3) What teaching practices do they use for their undergraduate teaching?

Organization of the Report

Corresponding to the questions listed above, this report contains three main sections. The first section identifies the characteristics of instructional faculty and staff who taught undergraduates. Unlike the earlier report that focused only on classroom instruction (Chen 2000), this report was expanded to include five measures of faculty's involvement in undergraduate education: 1) whether faculty members reported being involved in any undergraduate teaching activities;[1] 2) whether faculty provided at least one form of instruction (i.e., classroom instruction, individual instruction, or academic committee work) to undergraduates; 3) whether faculty taught at least one undergraduate class for credit; 4) whether faculty provided individual instruction to undergraduates;[2] and 5) whether faculty served on undergraduate academic committees.[3] This report examines various demographic characteristics of faculty, such as their gender, race/ethnicity, and age, as well as the characteristics that define their academic profession, such as their employment status, academic rank, tenure status, principal field of teaching, and highest degree held. Because emphasis on undergraduate teaching is related to the mission of the institution, data were analyzed and presented separately for faculty at 4-year doctoral institutions, 4-year nondoctoral institutions, and 2-year institutions.[4] Because full- and part-time instructional faculty and staff differ widely on most characteristics, analyses were also conducted separately for employment status.[5]

The second section of the report examines 1) time allocation of all instructional faculty and staff to various work activities and 2) a series of indicators of undergraduate teaching loads of those who taught one or more undergraduate classes for credit, including the total number of undergraduate classes faculty taught for credit and the total number of credit hours for these classes; the total number of actual hours faculty spent in the undergraduate classroom per week; the total

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[1]This measure was derived from respondents' reports of the percentage of total work time they devoted to undergraduate teaching activities per week. If the percentage was greater than "0," the respondent was considered to be involved in undergraduate teaching. "Undergraduate teaching activities" were defined broadly in the survey and included teaching classes, grading papers, preparing courses, developing new curricula, advising or supervising students, supervising student teachers and interns, and working with student organizations or intramural athletics.

[2]Examples of individual instruction include independent study, supervising student teachers or interns, or one-on-one instruction, such as working with individual students in a clinical or research setting.

[3]Examples of undergraduate academic committees include thesis honors committees, comprehensive exams or orals committees, and examination/certification committees.

[4]The classification of different institutions used in this report was based on the Carnegie Foundation's classification system. Public and private research and doctoral institutions were combined into "4-year doctoral institutions." Public and private comprehensive, public and private liberal arts, and other public and private specialized institutions were combined into "4-year nondoctoral institutions." Public and private 2-year colleges were combined into "2-year institutions." In the preliminary analysis, public and private institutions were examined separately and compared with one another. While there were some sector differences observed (public vs. private), these differences were generally not as large as those found among the types of institutions (e.g., doctoral vs. nondoctoral or 4-year doctoral vs. 2-year). In the interest of brevity, public and private institutions were combined into a single group throughout this report.

[5]The terms "full- and part-time instructional faculty and staff" in this report refer to the employment status of the person at the sampled institution rather than the amount of time devoted to instruction.

number of undergraduate students taught and undergraduate classroom contact hours generated; and finally, whether faculty members had one or more teaching assistants in some or all of their undergraduate classes. Detailed information concerning each class taught was reported for a maximum of five classes by each respondent.[6] Data for each type of institution were analyzed and reported separately. The analyses were also conducted separately for employment status.

The third section looks at the various types of teaching practices faculty used in their undergraduate classes. Instructional faculty and staff with classroom teaching responsibilities were asked about the primary instructional methods they used for up to five classes taught, including lecture/discussion, seminar, lab/clinic, apprenticeship/field work, and other methods. Because faculty members could report this information on up to five classes, a composite variable was developed describing whether the faculty used a particular method in all, some, or none of the undergraduate classes taught. Besides primary methods used in the classroom, instructional faculty and staff who taught undergraduate classes for credit were asked whether they used various assignment methods (i.e., student evaluations of each other's work, term/research papers, and multiple drafts of written work); assessment methods (i.e., multiple-choice, essay, and short-answer formats in midterm/final exams); and grading practices (i.e., grading on a curve and competency-based grading) for their undergraduate classes. Analyses were conducted separately for the type of institution at which faculty taught and their employment status. All differences cited in this report are significant at the .05 level.[7]

The Data and Sample

This report used data from the 1999 National Study of Postsecondary Faculty (NSOPF:99). Sponsored by NCES, this study was designed to provide a national profile of faculty and instructional staff in 2- and 4-year public and private not-for-profit, degree-granting postsecondary institutions of all types and sizes (Zimbler 2001).[8] The study had two components: a survey of a stratified random sample of postsecondary institutions and a survey of a stratified random sample of eligible faculty members within the participating institutions. Eligible faculty members con-

[6]Because NSOPF:99 collected class information for up to five classes, undergraduate teaching loads analyzed in this report may be underestimated for those who taught more than five classes. However, this underestimation is probably trivial because generally few faculty teach more than five classes in an academic term. According to the NSOPF:99, among instructional faculty and staff who reported teaching at least one class for credit in fall 1998, 93 percent reported teaching between one and five classes, and 7 percent taught more than five classes (U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty, Data Analysis System).

[7]In accordance with NCES standards, the Bonferroni adjustment to the significance level was used when multiple comparisons were made. With this adjustment, the .05 significance level was divided by the total number of comparisons made. See appendix B, Technical Notes, for a description of accuracy of estimates.

[8]The survey excluded institutions that either 1) offered only less than 2-year programs, 2) were private for-profit, or 3) were located outside the United States (for example, in U.S. territories). In addition, it excluded institutions that offer instruction only to employees of the institutions, tribal colleges, and institutions that offer only correspondence courses.

sisted of any individuals within the participating institutions who were designated as faculty, whether or not their responsibilities included instruction, and other (nonfaculty) personnel with instructional responsibilities. A total of 865 institutions and about 18,000 faculty and instructional staff within these institutions completed their survey questionnaires.

Faculty and instructional staff participating in NSOPF:99 were asked a series of questions regarding their involvement in various activities related to undergraduate teaching, including teaching for-credit classes, providing individual instruction, and serving on various academic committees. For detailed information on the survey design, sample selection, and measures used in this report, see the Glossary (appendix A) and the Technical Notes (appendix B).

Since the first and subsequent sections of this report differ in their focus, the faculty included also differs. The first section addresses the question of who teaches undergraduates and so includes faculty and instructional staff who had any instructional duties for credit in fall 1998.[9] Instructional duties here include teaching one or more classes for credit or advising or supervising academic activities for which students received credit. Those with instructional duties are called "instructional faculty and staff" or simply "faculty" in this report. The second and third sections examine undergraduate teaching loads and various teaching practices that faculty used in their undergraduate classes. Therefore, instructional faculty and staff who did not teach any undergraduate classes for credit were excluded from all analyses in the second and third sections, with one exception: all instructional faculty and staff were included in the analysis of faculty's time allocation. The term "for credit" may be omitted for brevity throughout this report, but all classes examined were for credit.

[9]Those with instructional duties may or may not have faculty status. All are included in this report regardless of their faculty status.

Who Taught Undergraduates in U.S. Postsecondary Institutions in Fall 1998?

In fall 1998, U.S. colleges and universities employed an estimated 976,000 faculty and staff who had some for-credit instructional responsibilities at their institutions (table 1).[10] About 36 percent of these instructional faculty and staff were employed at 4-year doctoral institutions, 35 percent at 4-year nondoctoral institutions, and 29 percent at 2-year institutions. The overwhelming majority of them were White, non-Hispanic (86 percent). Four out of ten (43 percent) worked part time. Nearly three out of five (59 percent) were men and the modal age of this faculty group was between 45 and 54 years old. Full and associate professors constituted 36 percent of all instructional faculty and staff, and instructors/lecturers represented another 35 percent. About 44 percent of all instructional faculty and staff were tenured or on a tenure track, and one-half held a doctoral or a first-professional degree. These instructional faculty and staff are the focus of this report, which examines the extent to which faculty are involved in undergraduate instruction in U.S. postsecondary institutions.

The Overall Pattern of Faculty Involvement in Undergraduate Teaching

In fall 1998, a majority of postsecondary instructional faculty and staff were involved in undergraduate teaching: 85 percent of instructional faculty and staff (83 for full-time faculty and 88 percent for part-time faculty) reported being engaged in some kinds of undergraduate teaching activities, and 83 percent (81 percent for full-time faculty and 85 percent for part-time faculty) reported providing at least one type of instruction to undergraduates (figure 1).

While there were different ways of delivering instruction to undergraduates, classroom teaching was the most common: 77 percent of instructional faculty and staff reported teaching at least one undergraduate class, compared with 42 percent who provided individual instruction and 18 percent who served on academic committees. The pattern held true for both full- and part-time faculty: 74 percent of full-time faculty reported teaching undergraduate classes, compared with the percentage who reported providing individual instruction (45 percent) and serving on academic committees (23 percent). Among part-time faculty, 81 percent reported teaching at least one undergraduate class, compared with 37 percent who provided individual instruction and 11 percent who served on academic committees.

[10]According to NSOPF:99, there were about 1.1 million (1,074,000) faculty and instructional staff employed by U.S. public and private not-for-profit 2-year-and-above postsecondary institutions in fall 1998. Of these, 976,000 (91 percent) reported that they had some for-credit instructional responsibilities in fall 1998 and the remaining (98,000 or 9 percent) did not have any.

Table 1.—Number and percentage distribution of instructional faculty and staff, by employment status and demographic and academic characteristics of instructional faculty and staff: Fall 1998

Demographic and academic characteristics of instructional faculty and staff	Total		Full time		Part time	
	Number (in thousands)	Percentage	Number (in thousands)	Percentage	Number (in thousands)	Percentage
Total	976	100.0	560	100.0	416	100.0
Type of institution						
4-year doctoral	349	35.8	255	45.5	94	22.6
4-year nondoctoral	343	35.1	198	35.3	145	34.9
2-year	284	29.1	107	19.1	177	42.5
Gender						
Male	574	58.8	357	63.7	217	52.2
Female	403	41.2	203	36.3	199	47.9
Race/ethnicity						
American Indian/ Alaska Native	8	0.8	4	0.7	4	1.0
Asian/Pacific Islander	46	4.7	32	5.8	13	3.2
Black, non-Hispanic	47	4.8	28	5.1	19	4.5
Hispanic	34	3.5	19	3.3	16	3.7
White, non-Hispanic	841	86.2	477	85.1	364	87.6
Age						
Under 35	93	9.6	41	7.3	52	12.6
35–44	250	25.6	142	25.3	108	25.9
45–54	344	35.2	201	36.0	142	34.1
55–64	221	22.6	145	25.9	76	18.2
65 or older	69	7.1	31	5.5	38	9.2
Academic rank*						
Full professor	202	20.7	172	30.7	30	7.3
Associate professor	151	15.5	132	23.6	19	4.7
Assistant professor	148	15.2	125	22.3	23	5.6
Instructor or lecturer	341	34.9	89	15.9	252	60.5
Tenure status						
Tenured	314	32.1	297	53.1	16	3.8
On tenure track	112	11.4	105	18.8	6	1.5
Not on tenure track	427	43.8	102	18.1	326	78.3
No tenure system	124	12.7	56	10.0	68	16.5

See footnotes at end of table.

Table 1.—Number and percentage distribution of instructional faculty and staff, by employment status and demographic and academic characteristics of instructional faculty and staff: Fall 1998—Continued

Demographic and academic characteristics of instructional faculty and staff	Total		Full time		Part time	
	Number (in thousands)	Percentage	Number (in thousands)	Percentage	Number (in thousands)	Percentage
Highest degree obtained						
Doctoral/first-professional degree	487	49.9	375	67.0	112	26.9
Master's	381	39.0	156	27.8	225	54.1
Bachelor's or less	108	11.1	29	5.2	79	19.0
Principal field of teaching						
Agriculture and home economics	13	1.4	11	1.9	3	0.6
Business	70	7.3	39	7.0	32	7.8
Education	73	7.6	40	7.2	34	8.2
Engineering	34	3.6	25	4.5	9	2.3
Fine arts	71	7.4	34	6.0	39	9.3
Health sciences	132	13.8	85	15.2	50	11.9
Humanities	155	16.1	82	14.6	75	18.1
Natural sciences	177	18.4	113	20.1	67	16.0
Social sciences	100	10.4	59	10.6	42	10.1
All other programs	135	14.1	72	12.9	65	15.7

*Included in the total but not shown separately were those with other or no academic rank.

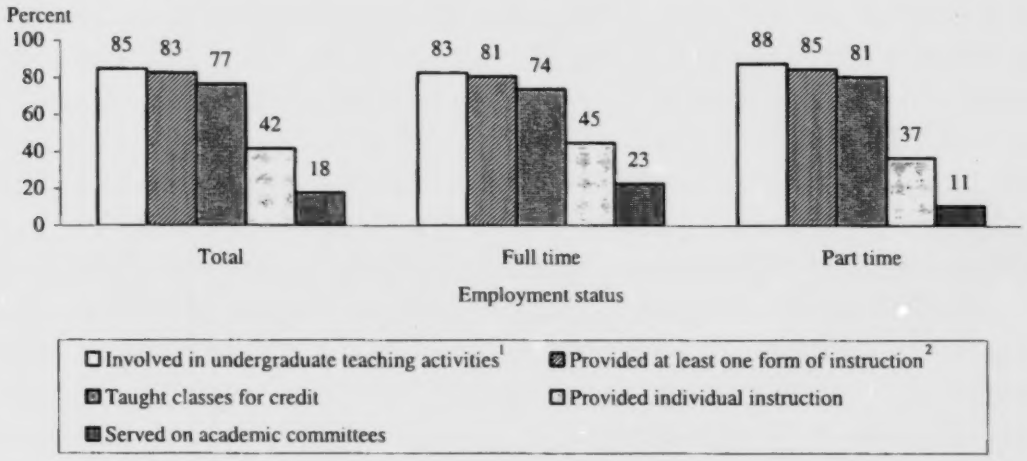
NOTE: This table includes all instructional faculty and staff. Percentages may not add to 100.0 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Variation Across Types of Institutions

There was considerable variation across institutions regarding the extent to which faculty were involved in undergraduate education. Instructional faculty and staff at 4-year doctoral institutions were less likely to be involved in undergraduate teaching than their colleagues at 4-year nondoctoral institutions, who in turn were less likely to be involved than those at 2-year institutions. Two-thirds (67 percent) of full-time instructional faculty and staff at 4-year doctoral institutions reported providing at least one type of instruction to undergraduates, compared with 90 percent of their counterparts at 4-year nondoctoral institutions and 98 percent of those at 2-year

Figure 1.—Percentage of instructional faculty and staff who were involved in undergraduate instruction, by type of instruction and employment status: Fall 1998



[1]"Undergraduate teaching activities" were defined broadly in the survey and included teaching classes, grading papers, preparing courses, developing new curricula, advising or supervising students, supervising student teachers and interns, and working with student organizations or intramural athletics.

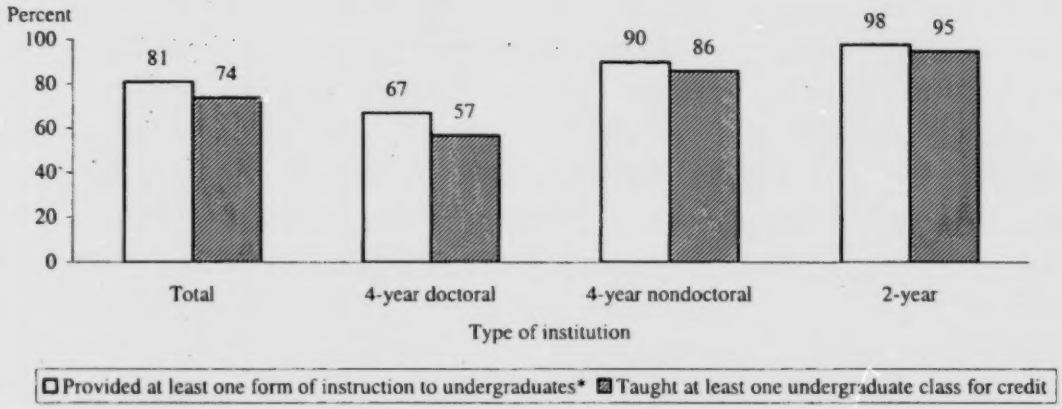
[2]Including classroom instruction, individual instruction, and academic committee work.

NOTE: This figure includes all instructional faculty and staff.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

institutions (figure 2). About 57 percent of full-time instructional faculty and staff at 4-year doctoral institutions reported teaching at least one class to undergraduates, again a lower percentage than that for their counterparts at 4-year nondoctoral and 2-year institutions (86 percent and 95 percent, respectively). This variation may reflect the different missions of these institutions. In 2-year institutions, faculty members are primarily involved in undergraduate teaching. For 4-year institutions, however, the mission is divided between teaching undergraduates, teaching graduates, and research. Compared with 4-year doctoral institutions, 4-year nondoctoral institutions may place a greater emphasis on teaching than research and teaching graduate students.

Figure 2.—Percentage of full-time instructional faculty and staff who provided at least one form of instruction to undergraduates and percentage who taught at least one class for credit to undergraduates, by type of institution: Fall 1998



*Including classroom instruction, individual instruction, and academic committee work.

NOTE: This figure includes only full-time instructional faculty and staff.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Use of Part-time Faculty and Graduate Student Teaching Assistants

An issue of concern among students, parents, administrators, state legislators, and the public is the use of part-time faculty and teaching assistants to teach undergraduate courses (Cox 2000). To obtain a full picture of which kinds of faculty and staff teach undergraduates, the NSOPF:99 Institution Survey directly asked participating institutions to estimate the percentage of undergraduate student credit hours assigned to various types of faculty members, including full- and part-time faculty and instructional staff, graduate student teaching assistants, and other staff. The data shown in table 2 suggest that full-time faculty and instructional staff represented the majority group in undergraduate education. On average across all types of institutions, about 71 percent of undergraduate credit hours were assigned to full-time faculty and instructional staff, a much higher percentage than that assigned to part-time faculty and instructional staff (27 percent) and teaching assistants and other staff (1 percent each).[11]

[11]This percentage distribution represents the estimated undergraduate credit hours assigned to various groups of faculty and staff rather than faculty members who were actually teaching undergraduate classes in fall 1998.

Table 2.—Percentage distribution of undergraduate student credit hours assigned to various types of faculty and staff, by type of institution: Fall 1998

Type of institution	Percentage of undergraduate student credit hours assigned to:*			
	Full-time faculty/ instructional staff	Part-time faculty/ instructional staff	Teaching assistants	Others
Total	71.3	27.3	0.8	0.6
4-year doctoral	70.3	19.1	8.1	2.5
4-year nondoctoral	74.9	24.5	0.3	0.3
2-year	66.8	32.5	0.0	0.6

*This percentage distribution represents institutions' estimates of undergraduate credit hours assigned to various groups of faculty and staff rather than those of faculty members who reported actually teaching undergraduate classes in fall 1998.

NOTE: This table includes all Title IV-eligible, degree-granting institutions. Percentages may not add to 100.0 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Institution Survey."

However, the use of part-time faculty and teaching assistants for undergraduate teaching varied across institutions. It was more common to use part-time faculty and instructional staff for undergraduate teaching in 4-year nondoctoral and 2-year institutions than in 4-year doctoral institutions, while using teaching assistants was more common in 4-year doctoral institutions than in 4-year nondoctoral and 2-year institutions.

The analysis of the faculty-level data also did not find that part-time faculty had a higher likelihood of teaching undergraduate students than their full-time colleagues (table 3). At 4-year nondoctoral institutions, part-time faculty were less likely than full-time faculty to report providing at least one type of instruction to undergraduates (85 percent vs. 90 percent), and, in particular, teaching undergraduate classes (80 percent vs. 86 percent). At 4-year doctoral and 2-year institutions, there was no difference detected between part- and full-time faculty in terms of their percentages of being engaged in undergraduate teaching activities (69 percent vs. 70 percent for 4-year doctoral institutions and 99 percent vs. 99 percent for 2-year institutions) or providing at least one form of instruction to undergraduates (65 percent vs. 67 percent for 4-year doctoral institutions and 97 percent vs. 98 percent for 2-year institutions). Furthermore, part-time faculty in all three types of institutions were less likely than their full-time colleagues to provide individual instruction to undergraduates or serve on undergraduate academic committees.

Table 3.—Percentage of instructional faculty and staff who were involved in undergraduate instruction, by type of instruction, institution, and employment status: Fall 1998

Type of institution and employment status	Involved in any undergraduate-related teaching activities[1]	Provided instruction to undergraduates			
		Total[2]	Classroom instruction[3]	Individual instruction[4]	Academic committee work[5]
Total	85.1	82.8	77.0	41.8	17.5
Part time	88.0	85.4	80.7	37.4	10.7
Full time	82.9	80.8	74.2	45.1	22.6
4-year doctoral institution	69.7	66.6	56.9	35.5	18.3
Part time	69.4	65.2	57.8	29.9	11.3
Full time	69.8	67.1	56.6	37.6	20.9
4-year nondoctoral institution	89.1	87.5	83.4	45.5	20.1
Part time	86.4	84.8	80.2	36.8	10.6
Full time	91.0	89.5	85.8	51.8	27.0
2-year institution	99.1	96.9	93.8	45.2	13.5
Part time	99.2	96.5	93.2	41.8	10.5
Full time	98.9	97.6	94.7	50.7	18.4

[1]The percentage was based on the respondent's report of the percentage of total work time they devoted to undergraduate teaching activities per week. If the percentage was greater than "0," the respondent was considered to be involved in undergraduate teaching. "Undergraduate teaching activities" were defined broadly in the survey and included teaching classes, grading papers, preparing courses, developing new curricula, advising or supervising students, supervising student teachers and interns, and working with student organizations or intramural athletics.

[2]Providing at least one type of instruction to undergraduates, including classroom instruction, individual instruction, and committee work.

[3]Teaching one or more undergraduate classes for credit.

[4]Examples of individual instruction include independent study, supervising student teachers or interns, or one-on-one instruction such as working with individual students in a clinical or research setting.

[5]Examples of undergraduate academic committees include thesis honors committees, comprehensive exams or oral committees, and examination/certification committees.

NOTE: This table includes all instructional faculty and staff.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Who Taught Undergraduates in Class?

Since classroom instruction was the most common form of undergraduate instruction for instructional faculty and staff, such instruction is the focus of the remainder of this report.[12] In

[12]Tables pertinent to individual instruction and academic committee work are presented in appendix B.

fall 1998, a majority of instructional faculty and staff (89 percent) at 4-year institutions provided various levels of classroom instruction (table 4).[13] Most of these instructional faculty and staff (79 percent) reported that they taught at least one undergraduate class, and 63 percent of them reported that all of their classes were undergraduate-level. Overall, instructional faculty and staff at 4-year doctoral institutions were less likely than their counterparts at 4-year nondoctoral institutions to teach undergraduate classes (69 percent vs. 88 percent), and to teach such classes exclusively (48 percent vs. 76 percent).

Table 4.—Percentage of instructional faculty and staff at 4-year institutions who taught classes for credit, and of those who did, percentage who taught at least one undergraduate class for credit and percentage who taught only undergraduate classes for credit, by type of institution and employment status: Fall 1998

Type of institution and employment status	Percentage who taught classes for credit	Of those who taught classes for credit, percentage who:	
		Taught at least one undergraduate class for credit	Taught only undergraduate classes for credit
All 4-year institutions	88.9	78.8	62.8
Part time	90.3	79.0	71.4
Full time	88.1	78.7	58.2
4-year doctoral institution	82.7	68.9	48.2
Part time	83.1	69.6	59.5
Full time	82.6	68.6	43.9
4-year nondoctoral institution	95.2	87.6	75.8
Part time	95.1	84.4	78.2
Full time	95.3	90.0	74.0

NOTE: The first column of this table includes all instructional faculty and staff at 4-year institutions and the second and third columns include only instructional faculty and staff who taught one or more classes for credit at 4-year institutions. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

While there was no difference detected between part- and full-time faculty at 4-year institutions regarding whether they taught at least one undergraduate class, part-time faculty were more likely than full-time faculty to report teaching only undergraduate classes. In fall 1998, 71 percent of part-time faculty who taught classes reported that all of their classes were at the under-

[13]Instructional faculty and staff at 2-year institutions were excluded from this particular analysis because all of them who taught for-credit classes taught undergraduate-level classes.

graduate level, compared with 58 percent of full-time faculty. This pattern held for 4-year doctoral institutions; however, it did not for 4-year nondoctoral institutions. It is clear that at least at 4-year doctoral institutions, the major difference between part- and full-time faculty lies in the undergraduate/graduate mix of classes they taught rather than whether or not they taught undergraduate classes. While full-time faculty taught both undergraduate- and graduate-level classes, part-time faculty were more likely than full-time faculty to be assigned solely to undergraduate classes.

Demographic Characteristics of Instructional Faculty and Staff Who Taught Undergraduate Classes

Three demographic characteristics of instructional faculty and staff are examined here—gender, race/ethnicity, and age—because these characteristics are often found to be associated with important aspects of faculty's academic life including hiring, promotion, pay, and work productivity (Bradburn and Sikora, forthcoming; Finkelstein, Seal, and Schuster 1998; Nettles, Perna, and Bradburn 2000; Xie and Shauman 1998). Table 5 presents the results.

Female faculty at 4-year doctoral institutions were more likely than male faculty to teach undergraduate classes exclusively, although there was no difference observed between the two groups at both types of 4-year institutions reporting teaching at least one undergraduate class. For example, at 4-year doctoral institutions, both part- and full-time female faculty were more likely than their male counterparts to report that all of their classes were at the undergraduate level. This gender difference, however, was not found at 4-year nondoctoral institutions.

In general, the responsibility of teaching undergraduate classes was more likely to fall on younger faculty members than on their older colleagues. Among part-time instructional faculty and staff at 4-year doctoral institutions, faculty who were under 35 years old were generally more likely than older faculty members (45 or older) to teach at least one undergraduate class, and to teach these classes exclusively; however, no difference by age was found in teaching undergraduate classes among full-time faculty. At 4-year nondoctoral institutions, full-time younger faculty members (under age 35) generally were more likely than their older colleagues to teach undergraduate classes, and to teach them exclusively. This pattern was somewhat evident among part-time faculty. One explanation for this pattern may be that younger faculty tend to be newly hired and employed in lower-rank positions than their older colleagues (Finkelstein, Seal, and Schuster 1998), so they might be more likely to be assigned to teaching lower-level undergraduate courses.

Table 5.—Of instructional faculty and staff who taught classes for credit at 4-year institutions, percentage who taught at least one undergraduate class for credit and percentage who taught only undergraduate classes for credit, by type of institution, employment status, and demographic characteristics of instructional faculty and staff: Fall 1998

Demographic characteristics of instructional faculty and staff	Taught at least one undergraduate class for credit				Taught only undergraduate classes for credit			
	4-year doctoral		4-year nondoctoral		4-year doctoral		4-year nondoctoral	
	Part time	Full time	Part time	Full time	Part time	Full time	Part time	Full time
Total	69.6	68.6	84.4	90.0	59.5	43.9	78.2	74.0
Gender								
Male	66.0	68.3	83.4	89.8	54.7	42.0	75.5	73.4
Female	73.6	69.3	85.4	90.4	64.7	48.4	81.1	75.1
Race/ethnicity								
American Indian/Alaska Native	(#)	(#)	(#)	97.4	(#)	(#)	(#)	78.3
Asian/Pacific Islander	73.6	68.2	87.0	93.0	67.9	39.7	84.1	69.9
Black, non-Hispanic	85.2	78.7	92.8	88.2	73.9	53.1	83.5	74.6
Hispanic	79.4	66.6	80.6	87.6	63.0	39.9	78.3	74.5
White, non-Hispanic	68.0	68.2	83.9	90.0	57.8	44.0	77.6	74.1
Age								
Under 35	84.6	73.7	93.2	96.9	82.4	47.6	90.8	86.1
35–44	69.9	65.5	84.3	90.1	61.3	41.1	80.7	76.1
45–54	66.4	66.7	81.5	87.2	54.6	42.7	73.5	70.4
55–64	65.5	72.6	84.3	91.5	55.5	48.4	80.6	74.2
65 or older	67.6	69.5	82.1	91.6	49.8	41.0	66.6	72.0

#Too small to report.

NOTE: This table includes only instructional faculty and staff who taught one or more classes for credit at 4-year institutions. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Generally, there was no detectable difference by faculty's race/ethnicity in the extent to which they engaged in undergraduate teaching. The exception was that full-time Black faculty at 4-year doctoral institutions were more likely than their full-time White colleagues to report

teaching undergraduate classes (79 percent vs. 68 percent), a pattern that also held for part-time Black faculty at 4-year nondoctoral institutions (93 percent vs. 84 percent).[14]

In sum, whether faculty taught undergraduate classes did not appear to be strongly related to their gender, age, and race/ethnicity. Although female or young faculty members tended to be more likely than their male or older counterparts to teach undergraduate classes or to teach such classes exclusively, these gender and age differences were not observed across both types of 4-year institutions or among both part- and full-time faculty members. This conclusion was consistent with previous findings based on the NSOPF:93 data (Chen 2000).

Academic Characteristics of Instructional Faculty and Staff Who Taught Undergraduate Classes

One indicator that might be of interest to researchers is the proportion of senior faculty members (i.e., full professors and tenured faculty) who teach undergraduates. Another measure is the variation among different faculty members in the extent to which they participate in undergraduate teaching. The following section examines how undergraduate teaching is associated with four academic characteristics of instructional faculty and staff: academic rank, tenure status, highest degree attained, and teaching fields. Table 6 presents the results.

In 1998, most senior faculty who taught classes did some undergraduate teaching. For example, among full-time faculty, 63 percent of full professors and 69 percent of tenured faculty with classroom instruction responsibilities reported teaching at least one undergraduate class at 4-year doctoral institutions, as did 89 percent of full professors and 91 percent of tenured faculty at 4-year nondoctoral institutions. In addition, 37 percent of full professors and 41 percent of tenured faculty at 4-year doctoral institutions, and 70 and 73 percent, respectively, at 4-year nondoctoral institutions, reported teaching undergraduate classes exclusively.

However, whether faculty taught undergraduates varied by their academic rank, particularly at 4-year doctoral institutions, where instructors/lecturers were more likely to teach undergraduates than those with higher academic ranks. At 4-year doctoral institutions, regardless of their employment status, instructors/lecturers were more likely than full, associate, and assistant professors to reported teaching at least one undergraduate class, and teaching such classes exclusively. At 4-year nondoctoral institutions, although there were no differences detected among

[14]It appears that part-time Black faculty at 4-year doctoral institutions were more likely (85 percent) than their part-time White colleagues (68 percent) to report teaching at least one undergraduate class. However, the difference was not statistically significant due to relatively large standard errors associated with these two faculty groups.

Table 6.—Of instructional faculty and staff who taught classes for credit at 4-year institutions, percentage who taught at least one undergraduate class for credit and percentage who taught only undergraduate classes for credit, by type of institution, employment status, and academic characteristics of instructional faculty and staff: Fall 1998

Academic characteristics of instructional faculty and staff	Taught at least one undergraduate class for credit				Taught only undergraduate classes for credit			
	4-year doctoral		4-year nondoctoral		4-year doctoral		4-year nondoctoral	
	Part time	Full time	Part time	Full time	Part time	Full time	Part time	Full time
Total	69.6	68.6	84.4	90.0	59.5	43.9	78.2	74.0
Academic rank*								
Full professor	48.5	63.3	82.6	89.2	34.2	37.1	59.2	69.7
Associate professor	59.7	70.9	76.5	89.5	41.3	42.0	68.9	70.6
Assistant professor	46.7	68.6	79.0	90.3	34.0	44.0	73.3	76.1
Instructor or lecturer	79.7	83.1	89.5	94.8	70.6	71.0	85.5	87.2
Tenure status								
Tenured	59.9	68.7	89.0	90.8	50.6	40.9	63.6	72.9
On tenure track	(#)	71.6	(#)	89.7	(#)	43.7	(#)	72.8
Not on tenure track	71.4	66.7	84.4	91.0	61.7	54.1	79.4	80.5
No tenure system	54.7	49.6	82.9	85.5	41.8	24.6	76.2	71.5
Highest degree obtained								
Doctoral/first-professional degree	55.5	65.6	70.4	87.8	42.9	39.7	60.9	68.7
Master's	81.7	85.5	89.4	95.6	74.0	68.0	84.3	86.4
Bachelor's or less	88.0	81.0	95.9	86.9	80.5	68.1	92.8	74.7
Principal field of teaching								
Agriculture and home economics	(#)	87.4	(#)	91.6	(#)	65.7	(#)	82.5
Business	74.0	78.8	87.8	94.3	67.8	47.6	72.5	70.9
Education	65.2	65.7	63.7	83.0	46.3	29.3	50.9	56.7
Engineering	62.7	77.7	(#)	97.2	50.9	45.3	(#)	83.4
Fine arts	93.5	89.3	95.2	97.7	84.9	58.8	91.8	86.9
Health sciences	37.8	37.2	73.1	68.5	25.6	19.6	55.4	50.8
Humanities	94.2	92.4	88.8	95.6	91.4	67.1	87.3	82.0
Natural sciences	88.1	68.1	94.4	94.3	74.8	45.0	91.7	85.0
Social sciences	73.7	79.2	87.2	93.6	62.3	53.1	81.4	71.6
All other programs	57.4	60.4	77.7	81.8	47.9	39.0	75.0	69.5

#Too small to report.

*Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes only instructional faculty and staff who taught one or more classes for credit at 4-year institutions. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

faculty with various academic ranks who reported teaching at least one undergraduate class, instructors/lecturers were more likely than full or associate professors to report teaching undergraduate classes exclusively.

There were few differences found by faculty's tenure status in who taught undergraduate classes among instructional faculty and staff at 4-year institutions. Full-time instructional faculty and staff at 4-year doctoral institutions who were not on a tenure track were more likely than their tenured or tenure-track colleagues to report teaching only undergraduate classes. However, at both types of institutions, faculty's tenure status was not found to be associated with whether they taught at lease one undergraduate class,[15] and at 4-year nondoctoral institutions, was not found to be associated whether they taught undergraduate classes exclusively.

Whether or not faculty taught undergraduate classes was associated with the highest degree they had attained. At 4-year doctoral institutions, part- and full-time faculty members who held a less-than-doctoral-or-first-professional degree were generally more likely than those who held a doctoral or first-professional degree to teach undergraduate classes, and to teach such classes exclusively. Similar patterns were observed among part- and full-time instructional faculty and staff at 4-year nondoctoral institutions.[16]

Finally, faculty's likelihood of teaching undergraduate classes also varied across teaching fields. For example, among full-time instructional faculty and staff who taught classes at 4-year doctoral institutions, those in fine arts (89 percent), humanities (92 percent), and agriculture (87 percent) were more likely than the average faculty member (69 percent) to report teaching undergraduate classes, whereas those in the health sciences (37 percent) were less likely to report doing so. Full-time humanities faculty (67 percent) were also more likely than average (44 percent) to teach undergraduate classes exclusively, whereas health sciences faculty (20 percent) were less likely to do so.

Among full-time instructional faculty and staff who taught classes at 4-year nondoctoral institutions, teaching at least one undergraduate class was reported by a majority of faculty (90 percent). However, a lower proportion of full-time health sciences faculty (69 percent) reported

[15]It appeared that at 4-year doctoral institutions, faculty who worked at institutions not offering a tenure system were much less likely than other faculty members to report teaching at least one undergraduate class or teaching only undergraduate classes. However, the differences were not statistically significant because of large standard errors associated with those faculty who worked at institutions that did not have a tenure system.

[16]There were some exceptions. For example, among full-time faculty at both types of 4-year institutions, there was no statistical difference between faculty with a bachelor's or lower degree and those with a doctoral or first-professional degree to report teaching at least one undergraduate class. Among full-time faculty at 4-year nondoctoral institutions, no statistical difference was found between those with a bachelor's or lower degree and those with a doctoral or first-professional degree in terms of reporting teaching undergraduate classes exclusively.

teaching any undergraduate classes than those in any other field (82 percent to 98 percent). In addition, full-time faculty who taught fine arts (87 percent) and natural sciences (85 percent) were more likely than average (74 percent) to report teaching only undergraduate classes, whereas those who taught health sciences (51 percent) or education (57 percent) were less likely to report doing so.

Independent Relationship of Specific Variables to Teaching Undergraduate Classes

The above analysis showed that who taught undergraduates varied considerably among instructional faculty and staff at 4-year institutions. In general, those who worked at 4-year nondoctoral institutions, held a lower academic rank such as instructor or lecturer, and had a master's degree or less, were more likely to teach at least one undergraduate class and to teach such classes exclusively than were those without these characteristics. In addition, those who were employed part time at 4-year doctoral institutions and worked in a nontenure-track position generally were more likely than their full-time and tenured or tenure-track counterparts to report teaching undergraduate classes exclusively. Because these faculty characteristics are interrelated, the observed relationships may not reflect the "true" relationships when the effects of other related factors are controlled. For instance, it is known that employment status is related to academic rank and that faculty who are employed part time are more likely to work in a lower ranked position than their full-time peers.[17] Therefore, the higher percentage of part-time faculty relative to that of full-time faculty who were teaching only undergraduate classes may be due to their low academic rank and not necessarily their employment status per se. This suggests that the relationship between employment status and teaching only undergraduate classes would be reduced or disappear if academic rank were controlled.

In order to examine the relationship between faculty characteristics and undergraduate teaching independent of other related factors, a multivariate regression model was used.[18] This model allows examination of how specific variables are associated with the outcomes of interest while simultaneously controlling for the interrelationships among a group of variables. Two outcomes were examined in the regression analyses: the proportion of instructional faculty and staff who taught at least one undergraduate class and the proportion of those who taught undergraduate classes exclusively. The independent variables included the faculty member's gender, race/ethnicity, age, employment status, academic rank, highest degree obtained, principal field of

[17]In fall 1998, 61 percent of part-time instructional faculty and staff held the rank of instructor or lecturer, and 12 percent held the rank of full or associate professor; the corresponding percentages for full-time instructional faculty and staff were 16 percent and 54 percent, respectively (Zimbler 2001).

[18]See appendix B for details on the method used.

teaching, and type of 4-year institution.[19] The results of these analyses are presented in table 7. The columns for the unadjusted percentages show the percentages of instructional faculty and staff who taught undergraduate classes without controlling for other variables. The columns for the adjusted percentages show the corresponding percentages after controlling for the covariation of the independent variables included in the model. Asterisks indicate whether a particular group differs significantly from the comparison group, which is italicized.

When taking into consideration various academic and demographic characteristics of instructional faculty and staff, these variables accounted for 18 percent of the variance in faculty teaching at least one undergraduate class and 21 percent of the variance in faculty teaching undergraduate classes exclusively.[20] Most relationships identified in the tabular analysis remained after controlling for various faculty characteristics. Specifically, instructional faculty and staff at 4-year doctoral institutions were less likely to teach undergraduate classes and to teach such classes exclusively than were their colleagues at 4-year nondoctoral institutions even after other variables in the model were controlled (table 7). The higher proportion of instructors/lecturers relative to that of full professors who taught undergraduate classes or taught such classes exclusively remained after controlling for type of institution, principal field of teaching, employment status, highest degree, gender, race/ethnicity, and age. Similarly, when other faculty characteristics were held constant, faculty with a bachelor's or master's degree were more likely to teach classes to undergraduates and to teach such classes exclusively than were faculty with a doctoral or first-professional degree.

There were several notable exceptions, however. Although the unadjusted percentages did not reveal differences between part- and full-time faculty in the likelihood of teaching undergraduate classes, after controlling for other factors, part-time faculty were shown to be less likely (74 percent) than their full-time colleagues (82 percent) to do so. In addition, although the unadjusted percentages indicated that part-time faculty (71 percent) were more likely than full-time faculty (58 percent) to teach only undergraduate classes, the difference was no longer found (61 percent and 64 percent) after other variables were taken into consideration. This suggests that employment status may not be a uniquely critical factor in differentiating who is likely to teach undergraduate classes.

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[19]Tenure status was excluded because it was highly correlated with academic rank. According to NSOPF:99, in fall 1998, 84 percent of full professors and 69 percent of associate professors at 4-year institutions were tenured, whereas only 10 percent of assistant professors were tenured and 97 percent of instructors or lecturers were not on a tenure track or were at institutions with no tenure system. The correlation between academic rank and tenure status among instructional faculty and staff at 4-year institutions was .64.

[20]Bivariate correlations showed that the effect sizes of the independent variables on faculty teaching at least one undergraduate class were small to moderate, with correlations ranging in absolute value from .004 to .230. The correlations of the independent variables to faculty teaching undergraduate classes exclusively were also small to moderate, ranging in absolute value from .005 to .285. See appendix B for details.

Table 7.—Among instructional faculty and staff who taught one or more classes for credit at 4-year institutions, percentage who taught at least one undergraduate class for credit, percentage who taught only undergraduate classes for credit, and the adjusted percentages after controlling for the variables listed in the table: Fall 1998

Variable[1]	Taught at least one undergraduate class for credit				Taught only undergraduate classes for credit			
	Unadjusted percentage[2]	Adjusted percentage[3]	Least squares coefficient[4]	Standard errors[5]	Unadjusted percentage[2]	Adjusted percentage[3]	Least squares coefficient[4]	Standard errors[5]
Total	78.8	78.8	0.78	0.03	62.8	62.8	0.49	0.04
Gender								
Male	77.7	78.6	-0.01	0.01	59.7*	62.0	-0.02	0.02
Female	*80.6*	*79.2*	*(†)*	*(†)*	*67.9*	*64.2*	*(†)*	*(†)*
Race/ethnicity								
American Indian/ Alaska Native	89.1*	94.3*	0.16	0.07	76.0	80.2*	0.18	0.08
Asian/Pacific Islander	78.1	81.4	0.03	0.03	57.1	62.5	0.00	0.03
Black, non-Hispanic	86.3*	82.7	0.04	0.03	70.6	66.6	0.04	0.03
Hispanic	76.7	76.1	-0.02	0.03	60.0	58.5	-0.04	0.04
White, non-Hispanic	*78.4*	*78.4*	*(†)*	*(†)*	*62.7*	*62.6*	*(†)*	*(†)*
Age								
35–44	77.3*	77.2*	-0.05	0.02	62.4*	61.5	-0.04	0.03
45–54	76.6*	77.3*	-0.05	0.02	59.9*	61.0	-0.05	0.03
55–64	80.6*	80.8	-0.01	0.02	63.8*	66.2	0.00	0.03
65 or older	77.7*	81.3	-0.01	0.03	57.2*	61.3	-0.05	0.04
Under 35	*87.1*	*81.9*	*(†)*	*(†)*	*76.2*	*65.9*	*(†)*	*(†)*
Employment status								
Part time	79.0	73.6*	-0.08	0.02	71.4*	61.4	-0.02	0.02
Full time	*78.7*	*81.6*	*(†)*	*(†)*	*58.2*	*63.5*	*(†)*	*(†)*
Academic rank[6]								
Instructor or lecturer	86.9*	82.3*	0.07	0.02	80.1*	71.2*	0.16	0.03
Assistant professor	77.5	80.6*	0.06	0.02	59.5*	64.1*	0.09	0.02
Associate professor	78.2	81.4*	0.06	0.02	55.1	60.9*	0.06	0.02
Full professor	*73.6*	*74.9*	*(†)*	*(†)*	*50.8*	*55.1*	*(†)*	*(†)*
Highest degree obtained								
Bachelor's or less	91.2*	92.2*	0.18	0.03	84.8*	78.2*	0.22	0.04
Master's	89.3*	87.0*	0.13	0.02	80.8*	73.8*	0.17	0.02
Doctoral/first-professional degree	*72.5*	*73.9*	*(†)*	*(†)*	*52.0*	*56.4*	*(†)*	*(†)*

See footnotes at end of table.

Table 7.—Among instructional faculty and staff who taught one or more classes for credit at 4-year institutions, percentage who taught at least one undergraduate class for credit, percentage who taught only undergraduate classes for credit, and the adjusted percentages after controlling for the variables listed in the table: Fali 1998—Continued

Variable[1]	Taught at least one undergraduate class for credit				Taught only undergraduate classes for credit			
	Unadjusted percentage[2]	Adjusted percentage[3]	Least squares coefficient[4]	Standard errors[5]	Unadjusted percentage[2]	Adjusted percentage[3]	Least squares coefficient[4]	Standard errors[5]
Principal field of teaching								
Agriculture/ home economics	88.6*	91.1*	0.16	0.05	74.1*	80.5*	0.32	0.06
Business	86.7*	83.2*	0.08	0.03	65.5*	59.3*	0.11	0.04
Engineering	77.8	82.6*	0.07	0.04	53.8	63.7*	0.15	0.04
Fine arts	94.5*	88.6*	0.13	0.03	82.1*	71.9*	0.23	0.04
Health sciences	47.4*	55.1*	-0.20	0.03	30.7*	41.6*	-0.07	0.03
Humanities	92.8*	91.5*	0.16	0.03	80.5*	77.7*	0.29	0.03
Natural sciences	82.6*	84.2*	0.09	0.03	68.2*	72.5*	0.24	0.03
Social sciences	85.2*	87.1*	0.12	0.03	66.6*	69.2*	0.21	0.03
All other fields	70.2	69.2*	-0.06	0.03	58.2	55.6*	0.07	0.03
Education	*72.0*	*75.2*	*(†)*	*(†)*	*48.3*	*48.7*	*(†)*	*(†)*
Type of 4-year institution								
4-year doctoral	68.9*	72.9*	-0.12	0.01	48.2*	53.7*	-0.18	0.02
4-year nondoctoral	*87.6*	*84.8*	*(†)*	*(†)*	*75.8*	*72.1*	*(†)*	*(†)*

*$p \leq .05$.

†Not applicable for the reference group.

[1]The italicized group in each category is the reference group being compared.

[2]The estimates were from the NSOPF:99 Data Analysis System.

[3]The percentages were adjusted for differences associated with other variables in the table (see appendix B).

[4]Weighted least squares (WLS) coefficient, multiplied by 100 to reflect percentage (see appendix B).

[5]Standard error of WLS coefficient, adjusted for design effect, multiplied by 100 to reflect percentage (see appendix B).

[6]Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes only instructional faculty and staff who taught one or more classes for credit at 4-year institutions. Detailed information about classes could be reported for a maximum of five classes. The multiple R^2s for the two models shown in this table are 0.177 and 0.211, respectively.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Additionally, before adjustment, female faculty members were more likely than their male colleagues to teach classes exclusively to undergraduates. After controlling for various faculty characteristics, the gender difference was not found. It is possible that the higher unadjusted proportion of female faculty teaching only undergraduate classes relative to that of their male counterparts may be due to the fact that female faculty were more likely than male faculty to hold a lower academic rank and not have a doctoral or first-professional degree.[21]

The same reasons might be explained for age. Before the adjustments, the youngest faculty (i.e., those under age 35) were more likely than older faculty members to report teaching undergraduate classes or teaching such classes exclusively. After controlling for various faculty characteristics, fewer age differences were observed in terms of teaching at least one class to undergraduates and no age differences were found in terms of teaching only undergraduate classes. This pattern may reflect the fact that younger faculty tend to hold a lower academic rank and older faculty are more likely to hold a higher academic rank; and academic rank may make a bigger difference than age in determining who teaches undergraduate classes at 4-year institutions.[22] Finally, the difference between Black, non-Hispanic faculty being more likely than White, non-Hispanic faculty to report teaching at least one undergraduate class was not detected after adjusting for covariance.

[21] According to NSOPF:99, in fall 1998, 35 percent of female faculty at all 4-year institutions held an academic rank of instructor or lecturer, compared with 19 percent of male faculty, and 50 percent of female faculty had a doctoral or first-professional degree, compared with 73 percent of male faculty.

[22] According to NSOPF:99, in fall 1998, only 6 percent of faculty under age 35 at 4-year institutions held an academic rank of full or associate professor, compared with 40 percent of faculty ages 45–54 and 64 percent for faculty ages 55 or older. On the other hand, 46 percent of faculty under age 35 held a rank of instructor or lecturer, compared with 23 percent of faculty ages 45–54 and 17 percent for faculty ages 55 or older.

How Much Did Faculty Teach?

The previous section provided much useful information regarding who taught undergraduates in postsecondary institutions. While this information is important to parents, students, policymakers, state legislators, and the public at large, it captures only a portion of faculty involvement in undergraduate teaching. To understand more about how faculty members serve undergraduate students in colleges and universities, it is crucial to inquire about their teaching loads. How do faculty members spend their work time? Do they allocate more (or less) time to undergraduate teaching activities than to other activities such as research and graduate teaching? What are their undergraduate class loads? How many undergraduate students do they teach? Do they have teaching assistants in their undergraduate classes? This section addresses these questions by examining a series of measures regarding faculty efforts to teach undergraduates—including how they allocated their time among various work activities (e.g., teaching and research); undergraduate course loads; actual hours spent in the undergraduate classroom; number of undergraduate students taught; contact hours with these students; and use of teaching assistants. This analysis, combined with the findings in the previous section, can provide insight into the breadth and depth of faculty involvement in undergraduate teaching in postsecondary institutions.

Time Allocation

The ways in which faculty members divide their professional time and efforts among various work activities such as undergraduate teaching, graduate teaching, and research may reflect individual or institutional emphasis on these aspects of faculty work. The NSOPF:99 data on faculty's time allocation indicated that undergraduate teaching remained the primary focus of instructional faculty and staff in U.S. postsecondary institutions (table 8). In fall 1998, instructional faculty and staff across all types of institutions devoted on average 48 percent of their work time to undergraduate teaching activities, a considerably higher percentage than that allocated to graduate teaching activities (11 percent), research (11 percent), administrative tasks (10 percent), and all other tasks (21 percent).[23] This pattern also persisted when looking separately at full- and part-time instructional faculty and staff. For example, across all types of institutions, average

[23]The time that faculty spent on various activities includes their work time at the sampled institution as well as work time at other places of employment. For example, it is possible that an individual faculty member sampled at a 2-year institution could have spent some percentage of their time teaching graduate students at another institution.

full-time instructional faculty and staff spent 44 percent of their work hours on undergraduate teaching activities, a substantially higher percentage than what was devoted to graduate teaching activities (13 percent), research (15 percent), administration (14 percent), and all other tasks (14 percent). This overall pattern generally existed in all types of institutions with one notable exception that no difference was found among full-time instructional faculty and staff at 4-year doctoral institutions in the percentage of their time allocated to undergraduate teaching activities and to research activities (27 percent and 24 percent).

Table 8.—Percentage of time spent on various work activities by instructional faculty and staff, by type of institution and employment status: Fall 1998

Type of institution and employment status	Percentage of work time spent on:				
	Undergraduate teaching activities[1]	Graduate teaching activities[1]	Research	Administration	Other[2]
Total	48.2	10.6	10.8	9.5	20.9
Part time	53.5	8.2	4.8	3.6	29.9
Full time	44.2	12.5	15.2	13.9	14.3
4-year doctoral institution	29.4	18.1	20.1	11.3	21.1
Part time	36.8	15.9	8.4	4.4	34.5
Full time	26.7	19.0	24.4	13.8	16.1
4-year nondoctoral institution	52.5	9.9	7.5	10.2	20.0
Part time	51.7	10.1	4.9	3.4	30.0
Full time	53.0	9.8	9.4	15.1	12.7
2-year institution	66.1	2.3	3.3	6.6	21.9
Part time	64.0	2.5	2.9	3.4	27.2
Full time	69.5	1.9	3.8	11.9	13.0

[1]"Teaching activities" were defined broadly in the survey and included teaching classes, grading papers, preparing courses, developing new curricula, advising or supervising students, supervising student teachers and interns, and working with student organizations or intramural athletics.

[2]The "other" activities included professional growth, service, and outside consulting, freelance work, or other outside work/other nonteaching professional activities.

NOTE: This table includes all instructional faculty and staff. The time that instructional faculty and staff spent on various activities includes their work time at the sampled institution as well as the time spent at other institutions. Percentages may not add to 100.0 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Nevertheless, the percentage of time faculty allocated to undergraduate teaching was not uniform across institutions. Reflecting the broader missions of their institutions and the greater number of graduate students, instructional faculty and staff at 4-year doctoral institutions spent a smaller proportion of their time on undergraduate teaching activities (29 percent) and more of their time performing research (20 percent) and graduate teaching activities (18 percent) compared with their colleagues at 4-year nondoctoral institutions (53 percent, 8 percent, and 10 percent, respectively) and those at 2-year institutions (66 percent, 3 percent, and 2 percent, respectively).

The manner in which instructional faculty and staff allocated their time to undergraduate teaching also varied according to various faculty characteristics (table 9).[24] Looking only at full-time instructional faculty and staff at both types of 4-year institutions, full and associate professors spent a higher percentage of their work hours conducting research and engaging in graduate teaching than instructors/lecturers, whereas assistant professors and instructors/lecturers spent a higher proportion of their time performing undergraduate teaching than full professors.

The time instructional faculty and staff allocated to undergraduate teaching was related to the highest degree they attained: faculty with a doctoral or first-professional degree generally spent less of their time on undergraduate teaching than those with a master's or bachelor's degree. While tenure status did not appear to be related to the percentage of time faculty allocated to undergraduate teaching at both types of 4-year institutions, it was associated with the time they allocated to research: full-time tenured and tenure-track faculty spent more of their time on research than those who were not on a tenure track or who worked at institutions without a tenure system.

To summarize, the NOSPF:99 data on faculty's time allocation indicate that undergraduate teaching activities remain a major part of the work of most instructional faculty and staff in postsecondary institutions, particularly for faculty at 4-year nondoctoral and 2-year institutions. However, the ways in which faculty allocated their time were not uniformly distributed across different types of institutions and faculty ranks. In general, faculty at 4-year doctoral institutions spent less of their time on undergraduate teaching and more time on research and graduate teaching than those at 4-year nondoctoral and 2-year institutions. Full and associate professors generally spent less of their time on teaching undergraduates and more time on conducting research compared with assistant professors or instructors/lecturers.

[24]Faculty's gender, race/ethnicity, and age were included in the preliminary analysis but excluded from the final table, because these variables were generally not found to be associated with their time allocation.

Table 9.—Percentage of time spent by full-time instructional faculty and staff on undergraduate teaching activities, graduate teaching activities, and research, by type of institution and academic characteristics of instructional faculty and staff: Fall 1998

Academic characteristics of instructional faculty and staff	4-year doctoral			4-year nondoctoral			2-year		
	Undergraduate teaching	Graduate teaching	Research	Undergraduate teaching	Graduate teaching	Research	Undergraduate teaching	Graduate teaching	Research
Total	26.7	19.0	24.4	53.0	9.8	9.4	69.5	1.9	3.8
Academic rank*									
Full professor	21.4	21.2	26.7	49.6	11.6	10.8	69.4	2.0	4.3
Associate professor	26.4	19.8	24.2	52.8	10.6	10.4	70.1	1.4	3.8
Assistant professor	26.8	18.8	26.3	57.1	9.2	9.7	71.4	1.3	4.6
Instructor or lecturer	49.6	12.3	9.5	58.5	6.0	4.8	73.2	2.7	3.1
Tenure status									
Tenured	24.9	20.1	25.8	52.6	10.0	10.9	71.2	1.7	3.9
On tenure track	28.4	19.2	27.9	55.5	10.4	10.4	70.9	2.0	4.4
Not on tenure track	30.1	15.9	19.0	51.8	8.4	5.7	53.3	2.6	3.8
No tenure system	21.2	21.4	15.0	52.1	9.8	6.0	70.0	1.9	3.4
Highest degree obtained									
Doctoral/first-professional degree	23.6	20.4	26.7	50.7	11.7	11.0	66.3	2.1	5.3
Master's	45.6	10.9	11.2	58.5	5.5	6.1	70.6	1.4	3.5
Bachelor's or less	44.6	7.9	9.7	51.6	9.0	5.0	69.3	3.2	3.2
Principal field of teaching									
Agriculture and home economics	28.8	10.8	26.1	41.2	7.6	16.3	71.4	3.3	2.7
Business	34.7	17.1	22.0	54.4	9.7	9.4	71.7	0.6	2.9
Education	22.7	28.2	18.4	43.7	16.5	7.0	59.3	2.0	2.8
Engineering	31.4	18.5	26.4	60.0	6.0	11.2	64.3	3.5	2.7
Fine arts	45.3	12.9	16.3	58.1	4.8	11.2	68.3	1.0	7.2
Health sciences	11.3	23.5	20.2	37.2	21.5	6.4	68.4	4.0	2.1
Humanities	47.4	11.8	18.4	59.9	6.2	11.2	71.7	0.7	5.1
Natural sciences	26.0	18.0	35.5	62.2	6.1	8.4	77.5	1.2	3.4
Social sciences	28.7	17.7	27.2	52.9	8.7	11.4	70.6	1.2	4.2
All other programs	26.2	23.7	17.9	45.6	12.9	8.3	63.6	3.1	4.1

*Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes only full-time instructional faculty and staff. The time that instructional faculty and staff spent on various activities includes their work time at the sampled institution as well as the time spent at other institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Undergraduate Teaching Loads

Faculty undergraduate teaching loads are examined by six indicators: total number of undergraduate classes taught; total number of credit hours for these classes; total number of actual hours per week spent in the classroom teaching undergraduates; total number of undergraduate students taught; undergraduate classroom contact hours generated; and, finally, whether faculty members had teaching assistants in some or all of their undergraduate classes. These measures were constructed based on up to five classes reported by faculty. Only instructional faculty and staff who reported teaching at least one class to undergraduates were included in this set of analyses.[25] The overall results are displayed in table 10.

In fall 1998, instructional faculty and staff members who taught at least one undergraduate class in postsecondary institutions taught an average of three undergraduate classes (worth approximately 9 credit hours) with a total of 70 undergraduate students in these classes. Overall, faculty members spent about 9 hours each week in the classroom teaching undergraduates and generated a total of 249 undergraduate student classroom contact hours per week.[26] Most of these faculty members (82 percent) lacked a teaching assistant for their undergraduate classes.

Consistent with the findings on time allocation, instructional faculty and staff at 4-year doctoral institutions had lighter undergraduate teaching loads on most indicators than their colleagues at 4-year nondoctoral institutions, who had lighter teaching loads than those at 2-year institutions. For example, faculty who taught undergraduate classes at 4-year doctoral institutions taught an average of two undergraduate classes for a total of 7 undergraduate classroom credit hours, and spent about 7 hours per week in the undergraduate classroom. The corresponding figures for faculty at 4-year nondoctoral institutions were three classes, 9 credit hours, and 9 teaching hours, and for faculty at 2-year institutions, three classes, 12 credit hours, and 12 teaching hours. In addition, instructional faculty and staff at 4-year doctoral institutions were much more likely than their colleagues at 4-year nondoctoral or 2-year institutions to have teaching assistants in their undergraduate classes (33 percent vs. 14 percent and 10 percent, respectively).

Full-time faculty had higher undergraduate teaching loads than their part-time colleagues. Compared with part-time faculty, full-time faculty taught more undergraduate classes (three classes vs. two classes) with more credit hours (10 credit hours vs. 8 credit hours), had more undergraduate students (86 students vs. 49 students), spent more hours in the classroom teaching these students (11 hours vs. 7 hours), and generated more classroom contact hours with

[25]About 77 percent of instructional faculty and staff (81 percent of part-time faculty and 74 percent of full-time faculty) reported teaching at least one undergraduate class (see table 3).

[26]For each undergraduate class that faculty taught, the number of hours per week taught in the class was multiplied by the number of students in the class. The products were then added together to obtain the total undergraduate student contact hours.

Table 10.—Undergraduate teaching loads of instructional faculty and staff who taught at least one undergraduate class for credit, by type of institution and employment status: Fall 1998

Undergraduate teaching loads and employment status	Total	Type of institution		
		4-year doctoral	4-year nondoctoral	2-year
Total number of undergraduate classes taught for credit*	2.6	2.1	2.6	2.8
Part time	2.1	1.9	2.0	2.1
Full time	3.0	2.1	3.1	4.0
Total number of undergraduate classroom credit hours	9.3	7.4	8.6	11.5
Part time	8.0	7.1	6.9	9.0
Full time	10.4	7.5	9.8	15.5
Total number of hours per week spent in the classroom teaching undergraduates	9.4	6.9	8.9	11.7
Part time	7.4	6.1	6.6	8.4
Full time	10.9	7.1	10.5	17.0
Total number of undergraduates taught in the classroom	69.6	75.7	66.2	68.6
Part time	49.0	55.5	47.6	47.8
Full time	86.1	83.3	78.9	102.3
Total number of classroom contact hours with undergraduates per week*	248.7	243.2	227.9	275.3
Part time	174.3	175.6	155.7	187.0
Full time	308.8	268.6	277.4	418.6
Percentage having a teaching assistant in some or all of undergraduate classes taught	17.5	33.0	13.8	9.8
Part time	11.0	19.3	10.6	8.5
Full time	22.7	38.2	16.0	12.0

*For each for-credit undergraduate class taught, the number of hours per week spent teaching the class was multiplied by the number of students in the class. The products were then summed to obtain the total number of undergraduate student classroom contact hours.

NOTE: This table includes only instructional faculty and staff who taught at least one undergraduate class for credit. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

undergraduates (309 hours vs. 174 hours). However, full-time faculty were also more likely than part-time faculty to use teaching assistants in their undergraduate classes (23 percent vs. 11 percent). Because of these differences, it is important to separate part- and full-time faculty when analyzing their teaching loads. Thus, the remainder of this section focuses only on full-time instructional faculty and staff, examining how undergraduate teaching loads were related to various characteristics of faculty within each type of institution, including academic rank, tenure status, highest degree attained, and teaching fields.[27]

Number of Undergraduate Classes and Total Undergraduate Credit Hours Taught

There were some differences among instructional faculty and staff regarding the number of undergraduate classes or credit hours taught. At 4-year doctoral institutions, instructors/lecturers taught more undergraduate classes than assistant, associate, and full professors, and assistant and associate professors taught more classes than full professors (table 11). At 4-year nondoctoral institutions, assistant professors taught more undergraduate classes than full professors. However, at 2-year institutions, no differences were detected in faculty's class and credit loads according to their academic rank.

The relationship between class/credit loads and faculty's tenure status was not consistent across institutions. At 4-year doctoral institutions, full-time tenured and tenure-track faculty tended to teach fewer undergraduate classes than their nontenure-track counterparts, which was not observed at 4-year nondoctoral institutions. At 2-year institutions, the pattern was reversed: full-time tenured or tenure-track faculty taught more undergraduate classes than their colleagues who were not on a tenure track.

Undergraduate class and credit loads were associated with faculty's highest degree held. Full-time faculty at both types of 4-year institutions who held a doctoral or first-professional degree taught fewer undergraduate classes than their colleagues who held a master's, bachelor's, or lower degree. Such differences, however, were not found at 2-year institutions.

With few exceptions, the number of undergraduate classes taught by full-time faculty and their total credit hours varied little with faculty's teaching fields. The exceptions were at 4-year doctoral institutions, where full-time faculty in the natural sciences taught fewer undergraduate classes than the average faculty member, while fine arts faculty taught more than average. At 2-year institutions, full-time faculty whose teaching field was health sciences taught fewer undergraduate classes than average, and business and fine arts faculty taught more classes.

[27]Faculty's gender, race/ethnicity, and age were included in the preliminary analysis but were excluded from the final tables because few of these variables were found to be associated with undergraduate teaching loads.

Table 11.—Number of undergraduate classes taught for credit and number of undergraduate credit hours taught by full-time instructional faculty and staff, by type of institution and academic characteristics of instructional faculty and staff: *Fall 1998*

Academic characteristics of instructional faculty and staff	4-year doctoral		4-year nondoctoral		2-year	
	Classes	Credit hours	Classes	Credit hours	Classes	Credit hours
Total	2.1	7.5	3.1	9.8	4.0	15.5
Academic rank*						
Full professor	1.9	6.2	2.9	9.1	4.0	14.6
Associate professor	2.1	6.9	3.1	10.0	3.8	14.2
Assistant professor	2.1	7.1	3.3	10.4	4.1	13.9
Instructor or lecturer	3.0	13.4	3.0	9.9	4.2	17.6
Tenure status						
Tenured	2.0	6.5	3.0	9.6	4.0	16.2
On tenure track	2.1	6.8	3.2	9.8	4.1	14.6
Not on tenure track	2.6	10.9	2.9	8.9	3.3	12.9
No tenure system	(#)	(#)	3.3	12.3	4.0	15.2
Highest degree obtained						
Doctoral/first-professional degree	2.0	7.0	3.0	9.5	4.0	14.0
Master's	2.8	9.6	3.2	10.5	4.0	15.0
Bachelor's or less	2.7	7.9	3.5	10.0	4.0	18.5
Principal field of teaching						
Agriculture and home economics	2.2	6.3	3.1	11.7	4.3	17.6
Business	2.2	8.5	3.0	11.5	4.5	15.3
Education	2.1	7.1	2.7	8.6	3.5	13.2
Engineering	1.9	6.9	3.1	9.8	4.0	16.8
Fine arts	2.7	7.9	3.2	8.9	4.4	14.1
Health sciences	2.2	7.7	2.8	10.8	3.1	14.5
Humanities	2.4	10.4	3.2	9.9	4.0	14.5
Natural sciences	1.9	6.2	3.0	9.6	4.0	14.9
Social sciences	2.0	6.3	3.1	10.0	4.3	16.5
All other programs	2.1	6.6	3.2	9.9	4.0	18.0

#Too small to report.

*Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes only full-time instructional faculty and staff who taught at least one undergraduate class for credit. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Undergraduate Classroom Teaching Hours

Because most instruction occurs in the classroom, the number of hours that faculty spend there teaching undergraduates is an important measure of their teaching loads. Looking at full-time instructional faculty and staff who provided classroom instruction to undergraduates (table 12), undergraduate classroom teaching hours were inversely related to academic rank. For instance, at 4-year doctoral institutions, instructors/lecturers spent 11 hours per week teaching undergraduates in class, whereas assistant or associate professors spent about 7 hours and full professors spent 6 hours. At 4-year nondoctoral institutions, assistant professors spent more hours teaching undergraduates in the classroom than full professors. At 2-year institutions, instructors/lecturers spent an average of 20 hours per week in the classroom teaching undergraduates, nearly 5 hours more than the time spent by assistant, associate, and full professors. This inverse relationship is expected given the finding that faculty with higher ranks generally taught fewer undergraduate classes than those with lower ranks.

While undergraduate classroom teaching time was associated with faculty's academic rank, it appeared to be inconsistently associated with their tenure status. At 4-year doctoral institutions, teaching time was inversely related to tenure status: full-time tenured and tenure-track faculty had fewer teaching hours than their colleagues who were not on a tenure track. This relationship, however, was not observed among full-time instructional faculty and staff at 4-year nondoctoral institutions, and it was reversed among those at 2-year institutions where tenured faculty spent more classroom hours teaching undergraduates (17 hours) than faculty who were not on a tenure track (14 hours).

The number of teaching hours full-time faculty spent in the classroom was associated with their highest degree. At each type of institution examined, full-time faculty with a doctoral or first-professional degree spent fewer hours per week teaching undergraduate classes than those with a master's, bachelor's, or lower degree.

Only a few significant relationships were observed between faculty's teaching hours and teaching fields. Because fine arts faculty at 4-year doctoral institutions taught more undergraduate classes than the average faculty member, they spent more hours teaching these classes than average (10 hours vs. 7 hours). Similarly, natural sciences faculty had fewer undergraduate teaching hours than average because they taught fewer undergraduate classes. In addition, full-time faculty at 4-year nondoctoral institutions who taught education spent fewer hours in the classroom than average, and full-time faculty at 2-year institutions who taught humanities and social sciences also spent fewer hours compared with the average.

Table 12.—Number of hours per week spent in the classroom teaching undergraduates by full-time instructional faculty and staff, by type of institution and academic characteristics of instructional faculty and staff: Fall 1998

Academic characteristics of instructional faculty and staff	4-year doctoral	4-year nondoctoral	2-year
Total	7.1	10.5	17.0
Academic rank*			
Full professor	5.9	9.8	15.7
Associate professor	6.9	10.5	15.2
Assistant professor	7.3	11.6	15.7
Instructor or lecturer	10.9	10.5	20.0
Tenure status			
Tenured	6.3	10.1	17.0
On tenure track	7.1	10.8	15.9
Not on tenure track	9.4	9.8	13.7
No tenure system	(#)	13.0	18.5
Highest degree obtained			
Doctoral/first-professional degree	6.3	9.9	14.7
Master's	10.6	11.5	16.0
Bachelor's or less	10.9	14.4	22.9
Principal field of teaching			
Agriculture and home economics	7.1	14.3	21.2
Business	7.0	10.2	16.0
Education	7.9	8.4	13.1
Engineering	6.5	11.3	19.3
Fine arts	10.4	11.8	18.6
Health sciences	8.1	11.2	18.3
Humanities	7.5	10.1	13.2
Natural sciences	5.8	11.1	16.1
Social sciences	6.0	9.8	12.9
All other programs	7.8	11.5	22.8

#Too small to report.

*Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes only full-time instructional faculty and staff who taught at least one undergraduate class for credit. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Total Number of Undergraduates Taught and Undergraduate Classroom Contact Hours

Both the total number of undergraduate students taught and undergraduate classroom contact hours were related to faculty's academic rank at 4-year doctoral institutions, but these relationships were not found at 4-year nondoctoral or 2-year institutions (table 13). As would be expected given their class/credit loads, full-time instructors/lecturers at 4-year doctoral institutions taught more undergraduate students and generated more student contact hours than full-time assistant, associate, and full professors.

In terms of tenure status, at 4-year doctoral institutions, full-time faculty who were not on a tenure track taught more undergraduate students and had higher classroom contact hours with these students than their tenured and tenure-track colleagues. This relationship was not found at 4-year nondoctoral institutions, however, and at 2-year institutions, this trend was partly reversed: full-time tenured or tenure-track faculty taught more undergraduate students than their counterparts who were not on a tenure track.

Faculty's highest degree was not consistently related to the number of undergraduate students taught or to their undergraduate classroom contact hours. At 4-year doctoral institutions, full-time faculty who held a master's degree had significantly higher student contact hours than those with a doctoral or first-professional degree (252 hours vs. 340 hours).[28] However, no differences were found by faculty's highest degree in terms of the number of undergraduate students taught. At 4-year nondoctoral institutions, neither indicator was found to be associated with faculty's highest degree. At 2-year institutions, on the other hand, faculty's highest degree was related to the number of undergraduate students taught, but this relationship was not found with the number of undergraduate classroom contact hours generated. Full-time faculty who held a doctoral, first-professional, or a master's degree taught more undergraduate students than those who had a bachelor's or lower degree.

With few exceptions, the number of undergraduate students taught and total number of undergraduate classroom contact hours generated by full-time faculty varied little with their teaching fields. The exceptions were at 4-year nondoctoral institutions, where full-time engineering faculty taught fewer undergraduate students than the average faculty member and social sciences faculty taught more undergraduate students. At 2-year institutions, full-time faculty whose teaching field was engineering or health sciences taught fewer undergraduate students than average, and those in social sciences taught more undergraduate students than average.

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[28]Full-time faculty who had a bachelor's or a lower degree appeared to have much more undergraduate classroom contact hours than full-time faculty who had a doctoral or first-professional degree. However, this difference was not statistically significant due to the large standard error associated with full-time faculty at doctoral institutions who had a bachelor's or lower degree.

Table 13.—Number of undergraduate students taught and total number of classroom contact hours with these students by full-time instructional faculty and staff, by type of institution and academic characteristics of instructional faculty and staff: Fall 1998

Academic characteristics of instructional faculty and staff	4-year doctoral		4-year nondoctoral		2-year	
	Number of undergraduates	Contact hours[1]	Number of undergraduates	Contact hours[1]	Number of undergraduates	Contact hours[1]
Total	83	269	79	277	102	419
Academic rank[2]						
Full professor	84	257	76	260	108	416
Associate professor	76	233	81	287	102	399
Assistant professor	74	254	82	285	108	419
Instructor or lecturer	123	419	80	303	99	454
Tenure status						
Tenured	81	249	81	274	110	439
On tenure track	71	235	77	262	104	392
Not on tenure track	102	363	75	254	79	335
No tenure system	(#)	(#)	78	365	93	415
Highest degree obtained						
Doctoral/first-professional deg	81	252	78	265	113	410
Master's	94	340	80	297	106	417
Bachelor's or less	82	360	73	384	79	435
Principal field of teaching						
Agriculture and home economics	87	275	82	603	110	564
Business	118	363	82	313	107	363
Education	65	291	66	203	85	317
Engineering	69	208	63	223	61	296
Fine arts	66	254	70	264	102	462
Health sciences	75	261	69	270	76	436
Humanities	72	222	77	246	113	372
Natural sciences	93	282	83	310	107	427
Social sciences	100	301	95	298	148	443
All other programs	81	284	83	301	94	477

#Too small to report.

[1]For each for-credit undergraduate class taught, the number of hours per week spent teaching the class was multiplied by the number of students in the class. The products were then summed to obtain the total number of undergraduate student classroom contact hours.

[2]Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes only full-time instructional faculty and staff who taught at least one undergraduate class for credit. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Use of Teaching Assistants in Undergraduate Classes

Although faculty's use of teaching assistants in undergraduate classes was associated with the type of institution at which they taught, few differences were observed by their academic characteristics (table 14). At 4-year doctoral institutions, while full professors appeared to be more likely than other faculty to have teaching assistants in their undergraduate classes, only the difference with associate professors was statistically significant. At 4-year nondoctoral and 2-year institutions, no differences by academic rank were found in faculty's use of teaching assistants in undergraduate classes.

Regarding faculty's highest degree, at 4-year doctoral institutions, full-time faculty who had a doctoral or first-professional degree were more likely to have teaching assistants in their undergraduate classes than those who held a master's degree. However, this relationship was not found at 4-year nondoctoral and 2-year institutions. Moreover, no differences in the use of teaching assistants in undergraduate classes were observed by faculty's tenure status in all types of institutions.

Faculty in several teaching fields tended to be more likely to have teaching assistants than the average faculty member, whereas others were less likely to have assistants. For instance, at 4-year doctoral institutions, full-time faculty in engineering (55 percent), natural sciences (54 percent), and social sciences (48 percent) were more likely than average (38 percent) to have teaching assistants in their undergraduate classes, whereas full-time faculty in the health sciences (19 percent) and humanities (28 percent) were less likely to have assistants. At 4-year nondoctoral institutions, full-time faculty who taught undergraduate classes in natural sciences (28 percent) were more likely than average (16 percent) to have teaching assistants, whereas those who taught business or education classes (10 percent and 8 percent, respectively) were less likely to have them.[29]

To summarize, although all instructional faculty and staff included in this analysis indicated that they taught undergraduate classes, their teaching loads varied. Reflecting the different missions of the institutions, instructional faculty and staff at 4-year doctoral institutions had lighter undergraduate teaching loads than their counterparts at 4-year nondoctoral institutions, who in turn had lighter loads than those at 2-year institutions. Within the institution types, a general pattern of variation emerged: faculty members with higher academic rank (e.g., full professors), higher tenure status (e.g., tenured), or higher degree attainment (e.g., a doctoral or first-

[29]The percentage of full-time faculty who taught agriculture and home economics at 4-year nondoctoral institutions also had a relatively low percentage of having teaching assistants (6 percent). However, due to large standard error, this percentage was not significantly different from that of average faculty (16 percent).

Table 14.—Of full-time instructional faculty and staff who taught at least one undergraduate class for credit, percentage who had one or more teaching assistants in some or all of their undergraduate classes, by type of institution and academic characteristics of instructional faculty and staff: Fall 1998

Academic characteristics of instructional faculty and staff	4-year doctoral	4-year nondoctoral	2-year
Total	38.2	16.0	12.0
Academic rank[1]			
Full professor	43.8	18.0	12.5
Associate professor	35.0	13.9	12.1
Assistant professor	35.6	15.7	13.5
Instructor or lecturer	35.4	15.7	12.1
Tenure status			
Tenured	40.7	16.4	12.5
On tenure track	37.7	15.3	11.5
Not on tenure track	32.7	15.1	16.3
No tenure system	(#)	16.8	10.2
Highest degree obtained			
Doctoral/professional degree	39.6	16.8	11.6
Master's	30.2	13.7	9.8
Bachelor's or less	45.7	22.8	19.7
Principal field of teaching			
Agriculture and home economics	45.7	6.2	19.2
Business	31.9	9.6	7.8
Education	25.1	8.4	8.8
Engineering	55.1	23.2	28.0
Fine arts	32.3	17.5	12.5
Health sciences	19.2	10.8	17.8
Humanities	27.6	13.2	7.4
Natural sciences	53.6	27.6	10.7
Social sciences	48.3	17.0	6.9
All other programs	26.4	12.2	15.8

#Too small to report.

[1]Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes only full-time instructional faculty and staff who taught at least one undergraduate class for credit. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty, 'Faculty Survey' (NSOPF:99).

professional degree) reported lighter undergraduate teaching loads. These relationships were particularly apparent among full-time instructional faculty and staff at 4-year doctoral institutions and somewhat so among full-time instructional faculty and staff at 4-year nondoctoral institutions; however, they were largely diminished (or some were even reversed) among those at 2-year institutions.

What Kinds of Teaching Practices Did Faculty Use in Their Undergraduate Classes?

This section examines the extent to which postsecondary faculty used various teaching practices for their undergraduate teaching. It focuses on primary classroom instructional methods, classroom assignments, assessments, and grading methods, and how faculty's uses of these teaching practices are associated with various faculty characteristics, including academic rank, tenure status, degree attainment, and teaching fields.[30] These analyses include only instructional faculty and staff who reported teaching at least one undergraduate class and are conducted separately for type of institution and employment status.

Instructional Methods

Instructional faculty and staff with classroom teaching responsibilities were asked about the primary instruction methods they used for up to five classes taught, including lecture/discussion, seminar, lab/clinic, and apprenticeship/field work. According to the responses of these instructional faculty and staff, the predominant teaching method for undergraduate classes was lecture/discussion. In fall 1998, 83 percent of instructional faculty and staff who taught undergraduate classes reported using lecture/discussion as their primary instructional method in at least one of their undergraduate classes (table 15). Compared with lecture/discussion, other methods were used less frequently: 21 percent used primarily labs or clinics; 11 percent identified seminars as their main instructional format; and only 5 percent used field work, such as internships and apprenticeships, as their primary method of instruction in at least one of their undergraduate classes.

While lecture/discussion was popular in all types of institutions, faculty's use of other methods varied with the type of institution at which they taught. For instance, faculty at 4-year doctoral and nondoctoral institutions were more likely than those at 2-year institutions to use seminars as their primary instructional method in at least one of their undergraduate classes. On the other hand, faculty at 2-year institutions were more likely than those at both types of 4-year institutions to use a lab or clinic as their primary teaching method in one or more undergraduate classes.

[30]Faculty's gender, race/ethnicity, and age were included in the preliminary analysis but excluded from the final tables because these variables were generally not found to be associated with various teaching methods used by faculty in their undergraduate classes.

Table 15.—Of instructional faculty and staff who taught at least one undergraduate class for credit, percentage who used various methods as their primary instructional methods in at least one of their undergraduate classes, by type of institution and employment status: Fall 1998

Type of institution and employment status	Lecture/ discussion	Seminar	Lab/clinic	Apprenticeship/ field work
Total	83.1	11.2	21.4	4.7
Part time	78.2	8.5	18.9	3.8
Full time	87.0	13.4	23.5	5.4
4-year doctoral institution	82.1	11.2	16.5	4.2
Part time	73.6	10.6	16.9	4.7
Full time	85.3	11.5	16.4	4.1
4-year nondoctoral institution	84.4	13.7	20.2	5.1
Part time	79.1	8.3	17.6	4.1
Full time	88.1	17.5	22.0	5.8
2-year institution	82.3	8.4	26.4	4.5
Part time	79.0	7.9	20.4	3.3
Full time	87.6	9.3	36.2	6.5

NOTE: This table includes only instructional faculty and staff who taught at least one undergraduate class for credit. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Full-time faculty tended to be more likely than part-time faculty to use certain instructional methods in their undergraduate classes. For instance, at 4-year doctoral institutions, full-time faculty were more likely than part-time faculty to use lecture/discussion to teach undergraduates in at least one of their classes (table 15). At 4-year nondoctoral institutions, full-time faculty were more likely than part-time faculty to report using lectures/discussions, seminars, and lab/clinics as their primary instructional method in one or more of their classes, and at 2-year institutions, full-time faculty were more likely to report using lectures/discussions, labs/clinics, and apprenticeship/field work in one or more of their classes.

There were some variations among faculty who had different types of degrees. Compared with full-time faculty with a lower degree (i.e., a master's or bachelor's degree), full-time faculty with a doctoral or first-professional degree were more likely to report using lectures/discussions and seminars as their main form of undergraduate teaching in at least one of their undergraduate classes and were less likely to report using labs/clinics and field work. However, with few excep-

tions,[31] full-time faculty's use of a particular instructional method for undergraduate teaching was not found to be associated with their academic rank and tenure status (table 16).

While lecture/discussion was popular in all teaching fields, faculty's use of other instructional methods was related to their teaching field. For instance, at 4-year doctoral institutions, full-time instructional faculty and staff who taught undergraduate classes in social sciences were more likely (21 percent) than their colleagues in business (5 percent), engineering (7 percent), fine arts (8 percent) or natural sciences (7 percent) to use seminars (table 16). Again at 4-year doctoral institutions, compared with the average faculty member (16 percent), full-time faculty in the fine arts (32 percent) and health sciences (30 percent) used labs/clinics more frequently in their undergraduate classes, while full-time faculty in the humanities (4 percent), business (7 percent), and social sciences (7 percent) were less likely to use these methods. Full-time instructional faculty and staff in health sciences (11 percent) were more likely than their colleagues in business, humanities, natural sciences, and social sciences (1 percent to 2 percent) to use internships and apprenticeships as their primary instructional methods in one or more of their undergraduate classes.

Assignment Methods

In terms of assignment methods, 60 percent of instructional faculty and staff who taught undergraduate classes indicated that they assigned term or research papers in some or all of their undergraduate classes; 44 percent asked students to evaluate each other's work; and 40 percent asked students to submit multiple drafts of written work (table 17). Faculty at 4-year nondoctoral institutions were more likely than faculty at 4-year doctoral institutions to adopt each of these practices, and they were also more likely than faculty at 2-year institutions to assign term or research papers and multiple drafts of written work.

Faculty's use of various assignment methods was somewhat related to their academic rank, tenure status, and degree attainment. For instance, among full-time faculty at 4-year doctoral institutions, full professors were generally less likely than assistant professors or instructors/lecturers to use term/research papers, student evaluations, and multiple drafts of written work in some or all of their undergraduate classes (table 18). Tenured faculty at 4-year doctoral institutions were less likely than their nontenure-track counterparts to ask students to evaluate

[31]The exceptions included 1) at 4-year doctoral institutions, assistant professors were more likely than full professors to use labs/clinics, as were nontenure-track faculty compared with tenured faculty; 2) at 2-year institutions, instructors/lecturers were more likely than assistant, associate, and full professors to report using labs/clinics; and 3) at 4-year doctoral institutions, nontenure-track faculty were more likely than tenured or tenure-track faculty to report using apprenticeship/field work, as were instructors/lecturers compared with associate or full professors at 2-year institutions.

Table 16.—Of full-time instructional faculty and staff who taught at least one undergraduate class for credit, percentage who used various methods as their primary instructional methods in at least one of their undergraduate classes, by type of institution and academic characteristics of instructional faculty and staff: Fall 1998

Academic characteristics of instructional faculty and staff	Lecture/discussion			Seminar			Lab/clinic			Apprenticeship/ field work		
	4-year doctoral	4-year non-doctoral	2-year	4-year doctoral	4-year non-doctoral	2-year	4-year doctoral	4-year non-doctoral	2-year	4-year doctoral	4-year non-doctoral	2-year
Total	85.3	88.1	87.6	11.5	17.5	9.3	16.4	22.0	36.2	4.1	5.8	6.5
Academic rank*												
Full professor	85.9	88.5	89.8	12.3	16.5	8.2	12.7	20.1	32.6	2.9	4.4	3.1
Associate professor	86.0	92.1	86.9	11.7	18.1	13.4	15.6	20.5	30.1	2.9	3.9	4.1
Assistant professor	83.9	88.3	90.9	11.5	20.9	10.5	19.5	22.5	31.2	5.7	9.0	10.1
Instructor or lecturer	86.6	82.1	85.0	9.3	13.5	8.7	20.3	27.1	44.8	5.1	5.7	9.6
Tenure status												
Tenured	86.0	90.7	88.6	12.0	16.2	10.1	13.9	20.9	34.7	3.0	4.7	5.5
On tenure track	86.1	86.7	87.5	11.1	24.6	9.5	17.7	20.9	38.9	2.5	8.6	7.8
Not on tenure track	82.8	82.7	83.7	10.7	12.7	9.8	22.5	26.3	34.0	8.4	4.7	7.7
No tenure system	(#)	87.1	86.9	(#)	17.1	7.7	(#)	22.0	38.0	(#)	7.7	7.5
Highest degree obtained												
Doctoral/first-professional degree	86.7	89.8	92.8	11.8	19.0	10.3	13.5	18.5	25.4	3.4	5.1	5.3
Master's	79.0	84.8	88.6	11.0	14.6	9.1	28.6	28.9	33.3	6.8	7.3	6.7
Bachelor's or less	81.3	83.2	78.6	2.8	11.3	9.0	30.5	29.0	57.9	8.9	5.7	7.5
Principal field of teaching												
Agriculture and home economics	88.2	86.8	84.2	8.2	24.9	1.2	18.8	41.9	53.7	6.4	10.0	13.0
Business	93.4	90.4	91.5	5.0	12.4	5.3	7.0	14.4	34.7	1.3	3.6	5.7
Education	81.2	75.2	82.6	8.6	26.3	17.6	21.1	17.3	26.6	9.4	16.7	12.3
Engineering	91.5	86.5	81.5	7.1	5.7	8.5	15.1	42.4	41.6	3.2	3.8	8.5
Fine arts	73.1	79.6	80.0	7.9	16.2	4.3	32.4	36.7	55.8	4.0	5.1	16.0
Health sciences	80.1	83.4	87.5	14.8	15.3	12.2	30.3	39.9	50.5	11.3	8.8	10.5
Humanities	88.9	92.5	91.3	14.7	21.9	12.3	4.1	9.4	17.8	1.8	3.6	3.7
Natural sciences	86.4	92.1	93.4	7.4	11.7	10.1	17.2	28.2	33.8	2.1	2.8	3.7
Social sciences	87.1	93.9	98.5	20.7	19.9	7.6	6.9	10.8	10.7	2.3	4.1	5.1
All other programs	80.8	88.0	74.9	11.4	16.8	6.9	26.2	28.5	51.3	4.9	7.9	5.8

#Too small to report.

*Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes only full-time instructional faculty and staff who taught at least one undergraduate class for credit. Detailed information about classes could be reported for a maximum of five classes.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Table 17.—Of instructional faculty and staff who taught at least one undergraduate class for credit, percentage who used various assignment methods in some or all of their undergraduate classes, by type of institution and employment status: Fall 1998

Type of institution and employment status	Student evaluations	Term/research papers	Multiple written drafts
Total	44.2	60.4	39.5
Part time	43.5	55.2	35.5
Full time	44.8	64.6	42.7
4-year doctoral institution	41.3	60.2	38.1
Part time	46.3	55.0	35.8
Full time	39.4	62.2	39.0
4-year nondoctoral institution	46.2	68.6	45.2
Part time	43.5	64.2	39.2
Full time	48.0	71.6	49.3
2-year institution	44.3	51.6	34.3
Part time	42.5	48.9	32.7
Full time	47.2	56.1	36.9

NOTE: This table includes only instructional faculty and staff who taught at least one undergraduate class for credit.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

each other's work, and to have students submit multiple drafts of written work. In addition, faculty at 4-year doctoral institutions with a doctoral or first-professional degree were less likely than those with a master's degree to ask students to evaluate each other's work in class.

There were also some differences among full-time faculty at 4-year nondoctoral institutions in their choice of assessment methods: full and associate professors were less likely than assistant professors to ask students to evaluate each other's work, as were tenured faculty versus their tenure-track colleagues, and full-time faculty with a doctoral or first-professional degree versus those with a master's degree. While tenured faculty at 4-year nondoctoral institutions were less likely than their tenure-track colleagues to assign term/research papers in some or all of their undergraduate classes, faculty with a doctoral or first-professional degree were more likely than those with a master's, bachelor's, or lower degree to do so. Associate professors were less likely than assistant professors to ask students to do multiple written drafts, as were tenured faculty versus tenure-track faculty. However, faculty with a higher degree were more likely than those with a lower degree to assign multiple written drafts in undergraduate classes.

Table 18.—Of full-time instructional faculty and staff who taught at least one undergraduate class for credit, percentage who used various assignment methods in some or all of their undergraduate classes, by type of institution and academic characteristics of instructional faculty and staff: Fall 1998

Academic characteristics of instructional faculty and staff	Student evaluations			Term/research papers			Multiple written drafts		
	4-year doctoral	4-year non-doctoral	2-year	4-year doctoral	4-year non-doctoral	2-year	4-year doctoral	4-year non-doctoral	2-year
Total	39.4	48.0	47.2	62.2	71.6	56.1	39.0	49.3	36.9
Academic rank*									
Full professor	30.1	40.1	43.4	58.4	69.9	55.8	33.9	48.1	37.3
Associate professor	38.5	46.6	45.9	63.1	71.5	59.3	36.5	46.3	34.5
Assistant professor	44.5	55.7	51.3	70.2	76.8	64.3	44.6	54.9	37.7
Instructor or lecturer	55.3	52.0	50.3	53.4	66.8	54.1	45.9	48.0	37.2
Tenure status									
Tenured	34.7	42.3	43.0	60.8	69.4	54.7	35.5	47.8	37.0
On tenure track	39.7	57.9	57.0	68.7	78.1	64.5	44.2	57.9	35.0
Not on tenure track	51.4	49.1	41.7	61.0	66.7	46.4	44.4	46.2	38.2
No tenure system	(#)	54.8	51.0	(#)	77.7	56.4	(#)	44.8	37.3
Highest degree obtained									
Doctoral/first-professional degree	36.1	45.2	39.7	63.8	75.3	59.0	38.9	53.0	36.0
Master's	56.0	53.8	49.0	56.8	64.6	56.9	40.5	42.9	38.5
Bachelor's or less	31.6	51.0	49.4	44.9	59.3	50.2	29.1	26.7	32.3
Principal field of teaching									
Agriculture and home economics	30.2	42.2	55.5	64.4	74.8	80.3	34.6	46.6	34.8
Business	39.5	48.6	49.2	63.7	76.4	59.9	28.9	39.7	47.0
Education	58.9	57.9	51.0	73.3	76.9	65.7	61.0	60.2	49.6
Engineering	32.4	43.7	48.5	51.9	65.6	58.6	21.1	41.5	31.4
Fine arts	61.6	60.5	56.1	60.7	62.9	51.5	40.1	38.6	24.0
Health sciences	48.6	54.7	56.2	64.1	74.4	61.2	31.7	40.8	34.6
Humanities	47.4	58.8	61.3	75.4	80.4	68.9	65.5	73.6	67.3
Natural sciences	24.4	31.0	29.8	43.5	53.8	43.3	22.8	31.1	17.9
Social sciences	25.8	33.1	36.4	73.8	84.9	68.8	41.8	49.4	32.3
All other programs	48.7	55.0	45.8	67.4	70.4	44.3	43.0	51.8	30.4

#Too small to report.

*Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes only full-time instructional faculty and staff who taught at least one undergraduate class for credit.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

At 2-year institutions, full-time tenured faculty were less likely than full-time tenure-track faculty to report using student evaluations and term/research papers. Full-time faculty with a doctoral or first-professional degree were also less likely than those with a master's degree to report using student evaluations in their undergraduate classes.

Finally, faculty's use of various assignment methods was related to their teaching fields. For example, looking at full-time instructional faculty and staff at 4-year doctoral institutions (table 18), those who taught undergraduate classes in fine arts (62 percent) were more likely than the average faculty member (39 percent) to ask students to evaluate each other's work; however, those in natural sciences (24 percent) and social sciences (26 percent) were less likely to use that method of evaluation. Full-time faculty in the humanities (75 percent) and social sciences (74 percent) were more likely than average (62 percent) to use term or research papers, while those in natural sciences (44 percent) were less likely, on average, to assign such papers. Finally, full-time faculty in education (61 percent) and the humanities (66 percent) were more likely than average (39 percent) to ask their students to submit multiple drafts of written work, while those in engineering (21 percent) and natural sciences (23 percent) were less likely to do so.

Assessment Methods

To assess students, 62 percent of instructional faculty and staff who taught undergraduate classes used short-answer exams for midterms/finals in some or all of their undergraduate classes; 60 percent used essay exams; and 58 percent used multiple-choice exams (table 19). Multiple-choice exams were used most frequently by instructional faculty and staff at 2-year institutions, and least frequently by those at 4-year doctoral institutions. Faculty at 4-year nondoctoral institutions and 2-year institutions were more likely than those at 4-year doctoral institutions to use short-answer exams, while faculty at 4-year nondoctoral institutions were more likely than those at the other two types of institutions to use essay exams.

Faculty's use of various assessment methods also differed according to their academic rank, tenure status, and highest degree held (table 20). Generally, full-time faculty with lower academic ranks (e.g., instructors/lecturers or assistant professors), lower tenure status (e.g., not on a tenure track), and lower degree attainment (e.g., a master's degree) were more likely to report using multiple-choice and short-answer exams and were less likely to report using essay exams than their respective counterparts (e.g., full professors, tenured faculty, and faculty with a doctoral or first-professional degree).

Table 19.—Of instructional faculty and staff who taught at least one undergraduate class for credit, percentage who used various assessment methods in some or all of their undergraduate classes, by type of institution and employment status: Fall 1998

Type of institution and employment status	Multiple-choice exams	Short-answer exams	Essay exams
Total	57.9	62.2	59.8
Part time	59.4	59.8	55.7
Full time	56.7	64.1	63.1
4-year doctoral institution	45.3	58.3	57.8
Part time	44.7	53.9	52.5
Full time	45.6	59.9	59.8
4-year nondoctoral institution	56.6	64.2	65.8
Part time	56.9	59.9	59.6
Full time	56.4	67.1	70.1
2-year institution	68.7	62.9	54.7
Part time	66.0	61.6	53.9
Full time	73.0	65.0	56.0

NOTE: This table includes only instructional faculty and staff who taught at least one undergraduate class for credit.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Finally, the kinds of assessments faculty used differed with respect to their teaching fields (table 20). For example, at 4-year doctoral institutions, full-time business faculty or health sciences faculty (69 percent for each group) were more likely than the average faculty member (46 percent) to use multiple-choice exams in their undergraduate classes, whereas those in engineering (25 percent) and the humanities (23 percent) used them less frequently. At all types of institutions, full-time faculty in the humanities were more likely than average to use an essay format in midterm or final exams, whereas those who taught natural sciences were less likely to do so.

Grading Methods

Instructional faculty and staff who taught undergraduate classes were more likely to report using competency-based grading than grading on a curve to assess students' performance in some or all of their undergraduate classes (61 percent vs. 30 percent) (table 21). Overall, faculty at 2-year institutions were more likely than faculty at both types of 4-year institutions to use a competency-based grading method, whereas faculty at 4-year doctoral institutions were more likely than faculty at the other two types of institutions to report using a grading-on-a-curve method.

Table 20.—Of full-time instructional faculty and staff who taught at least one undergraduate class for credit, percentage who used various assessment methods in some or all of their undergraduate classes, by type of institution and academic characteristics of instructional faculty and staff: Fall 1998

Academic characteristics of instructional faculty and staff	Multiple-choice exams			Short-answer exams			Essay exams		
	4-year doctoral	4-year non-doctoral	2-year	4-year doctoral	4-year non-doctoral	2-year	4-year doctoral	4-year non-doctoral	2-year
Total	45.6	56.4	73.0	59.9	67.1	65.0	59.8	70.1	56.0
Academic rank[1]									
Full professor	40.0	51.0	69.8	54.3	62.1	64.7	60.7	69.4	58.3
Associate professor	44.9	51.9	74.2	64.6	66.7	64.7	60.6	72.4	58.8
Assistant professor	51.9	61.0	74.7	63.4	72.3	64.5	61.2	71.3	61.3
Instructor or lecturer	49.8	67.3	75.5	57.6	71.1	66.3	53.0	67.7	53.3
Tenure status									
Tenured	42.2	52.5	71.1	59.2	63.6	66.2	60.3	68.7	57.9
On tenure track	48.4	55.1	73.5	63.9	71.6	65.2	64.9	73.6	59.6
Not on tenure track	51.9	64.9	74.4	58.2	69.4	58.8	54.5	68.5	44.5
No tenure system	(#)	65.0	76.0	(#)	72.5	64.2	(#)	73.0	53.4
Highest degree obtained									
Doctoral/ professional degree	44.3	53.9	69.3	60.6	66.9	61.8	62.5	73.2	60.9
Master's	51.3	61.6	72.5	56.0	67.4	64.5	48.1	63.9	57.4
Bachelor's or less	49.6	60.2	78.7	64.5	70.0	70.2	48.6	63.5	46.0
Principal field of teaching									
Agriculture and home economics	51.1	63.4	72.9	74.9	81.2	96.4	63.1	65.7	62.6
Business	69.3	75.2	85.5	63.4	72.6	70.1	56.2	73.6	60.3
Education	50.6	62.2	71.0	58.3	68.7	66.3	64.4	76.4	58.7
Engineering	24.7	37.0	72.9	55.2	55.6	78.1	46.8	45.8	48.2
Fine arts	41.6	43.2	59.1	56.8	65.6	64.0	55.2	66.4	61.9
Health sciences	69.4	82.5	93.3	55.9	58.2	49.8	49.5	51.6	34.9
Humanities	23.3	36.5	53.0	59.4	63.1	60.7	82.3	87.3	83.2
Natural sciences	42.5	53.8	67.2	68.7	74.2	70.1	49.2	54.4	49.0
Social sciences	56.2	65.1	83.1	53.6	63.8	63.6	68.8	78.7	63.6
All other programs	58.3	64.8	78.1	54.9	67.0	67.1	56.8	69.1	46.3

#Too small to report.

[1]Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes only full-time instructional faculty and staff who taught at least one undergraduate class for credit.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty, 'Faculty Survey' (NSOPF:99).

Table 21.—Of instructional faculty and staff who taught at least one undergraduate class for credit, percentage who used various grading methods in some or all of their undergraduate classes, by type of institution and employment status: Fall 1998

Type of institution and employment status	Grading on a curve	Competency-based grading
Total	29.7	60.6
Part time	27.2	61.6
Full time	31.8	59.8
4-year doctoral institution	36.1	57.3
Part time	30.0	61.0
Full time	38.4	55.9
4-year nondoctoral institution	28.8	59.8
Part time	25.6	61.6
Full time	30.9	58.6
2-year institution	26.1	64.0
Part time	27.3	61.8
Full time	24.0	67.4

NOTE: This table includes only instructional faculty and staff who taught at least one undergraduate class for credit.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Faculty's choice of grading method was related to their degree attainment. At 4-year institutions, full-time faculty with a doctoral or first-professional degree were more likely than those with a lower degree (i.e., a master's, bachelor's, or lower degree) to report using a grading-on-a-curve method in some or all of their undergraduate classes (table 22), but were less likely to report using a competency-based grading method. However, with only a few exceptions,[32] faculty's choice of grading method was not found to be associated with their academic rank and tenure status.

There were also differences in faculty's choice of grading methods across disciplines. For example, at 4-year doctoral institutions, full-time engineering (65 percent) and natural sciences (53 percent) faculty reported grading on a curve more frequently than the average faculty member (38 percent), whereas full-time education, fine arts, health sciences, and humanities faculty (17 percent to 24 percent) were less likely to do so. On the other hand, full-time fine arts (72 percent)

[32]For example, at 4-year nondoctoral institutions, full-time instructors/lecturers were more likely than full-time associate professors to report using competency-based grading; full-time tenured faculty were more likely than their nontenure-track colleagues to use grading-on-a-curve.

Table 22.—Of full-time instructional faculty and staff who taught at least one undergraduate class for credit, percentage who used various grading methods in some or all of their undergraduate classes, by type of institution and academic characteristics of instructional faculty and staff: Fall 1998

Academic characteristics of instructional faculty and staff	Grading on a curve			Competency-based grading		
	4-year doctoral	4-year non-doctoral	2-year	4-year doctoral	4-year non-doctoral	2-year
Total	38.4	30.9	24.0	55.9	58.6	67.4
Academic rank*						
Full professor	42.9	33.5	26.6	53.1	58.8	65.7
Associate professor	36.5	34.4	27.2	56.3	53.8	60.6
Assistant professor	38.1	27.3	26.5	58.3	59.2	65.6
Instructor or lecturer	31.4	28.3	19.7	56.1	66.0	70.4
Tenure status						
Tenured	40.6	34.0	26.1	55.3	55.7	66.7
On tenure track	37.2	29.1	27.2	57.8	57.9	68.3
Not on tenure track	33.0	26.6	25.4	55.4	64.0	67.9
No tenure system	(#)	26.0	18.1	(#)	66.3	68.2
Highest degree obtained						
Doctoral/first-professional degree	41.3	32.9	27.8	54.2	55.4	61.4
Master's	24.6	27.1	24.1	64.4	65.3	66.0
Bachelor's or less	36.0	23.4	19.4	52.3	64.0	78.9
Principal field of teaching						
Agriculture and home economics	37.9	50.6	21.4	57.3	62.1	69.9
Business	53.2	45.3	29.0	52.9	53.7	68.9
Education	17.3	16.8	21.2	67.1	77.1	66.3
Engineering	65.3	56.6	34.8	49.7	73.4	78.5
Fine arts	21.2	23.6	27.1	72.3	70.9	73.0
Health sciences	24.0	25.7	15.9	56.5	70.0	77.6
Humanities	20.5	24.5	15.6	54.7	52.5	67.0
Natural sciences	52.8	40.1	30.0	52.9	54.5	58.7
Social sciences	44.0	29.1	29.9	51.0	43.1	49.0
All other programs	37.1	31.6	23.6	60.8	61.3	75.1

#Too small to report.

*Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes only full-time instructional faculty and staff who taught at least one undergraduate class for credit.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

faculty were more likely than average (56 percent) to choose a competency-based approach to grading for their undergraduate classes. At 4-year nondoctoral institutions, full-time business (45 percent) and engineering (57 percent) faculty were more likely than average (31 percent) to report using a grading-on-a-curve method, whereas full-time education faculty (17 percent) were less likely to do so. There were no differences observed among full-time faculty at 2-year institutions in terms of whether they used grading on a curve in some or all of their undergraduate classes.

In conclusion, in fall 1998, lecture/discussion—the traditional method of teaching—was a major form of instruction in postsecondary institutions. Regardless of type of institution and teaching field, a majority of instructional faculty and staff used lecture/discussion as their primary instructional method in some or all of their undergraduate classes. While other teaching methods (e.g., seminars, labs, and field work) were used less frequently, the methods faculty selected were largely related to their teaching disciplines. Although groups of faculty members seemed to vary somewhat in their choice of teaching method, there was no consistent evidence suggesting that senior faculty members (i.e., full professors and tenured faculty) were more likely to use certain teaching practices over others that would require less of their time (e.g., lecture or multiple-choice exams) than junior faculty members (e.g., instructors/lecturers and nontenure-track faculty).

Summary and Conclusions

Using data from the 1999 National Study of Postsecondary Faculty (NSOPF:99), the purpose of this study was to determine the extent to which instructional faculty and staff in postsecondary institutions were involved in undergraduate teaching. Specifically, it addressed the following questions: 1) Who teaches undergraduates in U.S. postsecondary institutions? 2) How much do faculty teach? and 3) What kinds of teaching practices do faculty use in their undergraduate teaching? The major findings are summarized as follows.

Who Taught Undergraduates in U.S. Postsecondary Institutions?

Overall pattern. In fall 1998, a majority of postsecondary instructional faculty and staff were involved in undergraduate teaching: 85 percent reported being engaged in some undergraduate teaching activities, and 83 percent reported providing at least one type of instruction to undergraduates. Overall, instructional faculty and staff at 4-year doctoral institutions were less likely to be involved in work with undergraduates than their colleagues at 4-year nondoctoral institutions, who in turn were less likely to be involved than those at 2-year institutions.

While there were different ways of delivering instruction to undergraduates, classroom teaching was the most common method: 77 percent of instructional faculty and staff across all types of institutions reported teaching at least one undergraduate class during the fall term of 1998, compared with 42 percent who provided individual instruction to undergraduates and 18 percent who served on undergraduate academic committees. Because classroom instruction is the most common form of teaching for undergraduates, it was the focus of the report.

Use of part-time faculty and teaching assistants. One issue that students, parents, administrators, state legislators, and the general public have been particularly concerned about is the use of part-time faculty and teaching assistants for undergraduate instruction in universities and colleges. The data based on the NSOPF:99 Institution Survey indicated that traditional full-time faculty and instructional staff were the major group in undergraduate education in fall 1998. On average across all types of institutions, 71 percent of undergraduate credit hours were assigned to full-time faculty and instructional staff, a substantially higher percentage than that assigned to part-time faculty and instructional staff (27 percent) and teaching assistants (1 percent). However, part-time faculty and instructional staff were more commonly used for undergraduate in-

struction in 4-year nondoctoral and 2-year institutions than in 4-year doctoral institutions, while teaching assistants were more commonly used in 4-year doctoral institutions than in 4-year nondoctoral and 2-year institutions.

Involvement of senior faculty teaching undergraduate classes. One indicator that might be of interest to researchers, students, and parents is the proportion of senior faculty members (i.e., full professors and tenured faculty), particularly those at research and doctoral institutions, who teach undergraduates. The results of this report indicate that a majority of senior professors and tenured faculty who taught classes were involved in undergraduate teaching. For example, when looking at full-time instructional faculty and staff who taught classes at 4-year doctoral institutions, 63 percent of full professors and 69 percent of tenured faculty reported teaching at least one undergraduate class. In addition, about 40 percent of these senior faculty members reported teaching undergraduate classes exclusively.

Characteristics of faculty who taught undergraduate classes. The likelihood of teaching undergraduate classes varied somewhat among instructional faculty and staff at 4-year institutions. For example, among full-time instructional faculty and staff who taught classes at 4-year doctoral institutions, instructors/lecturers were more likely than assistant, associate, or full professors to teach such undergraduate classes and were more likely to teach them exclusively. Faculty members who held a degree below a doctoral or first-professional degree were generally more likely than those with a doctoral or first-professional degree to do so.

How Much Did Faculty Teach?

Time allocation. The analysis of how faculty allocated their time indicated that teaching undergraduates was the primary focus of instructional faculty and staff in postsecondary institutions. In fall 1998, instructional faculty and staff across all types of institutions devoted about one-half of their work hours (48 percent) to undergraduate teaching activities, a substantially higher percentage than what faculty devoted to graduate teaching activities (11 percent), research (11 percent), administrative tasks (10 percent), and all other tasks (21 percent).

Reflecting the broader missions of their institutions and the greater number of graduate students, instructional faculty and staff at 4-year doctoral institutions spent less of their time engaging in undergraduate teaching activities (29 percent) and more of their time doing research and graduate teaching activities (38 percent) than their colleagues at 4-year nondoctoral institutions (53 percent and 17 percent, respectively) and those at 2-year institutions (66 percent and 6 percent, respectively). The time allocated to undergraduate teaching was also inversely related to faculty's academic rank and the highest degree held.

Undergraduate teaching loads. In fall 1998, the average faculty member in postsecondary institutions who taught at least one undergraduate class taught about three undergraduate classes (worth approximately 9 credit hours), with a total of 70 students in these classes. Overall, they spent about 9 hours weekly in the classroom teaching undergraduates and generated a total of 249 undergraduate student classroom contact hours per week. Most of these faculty members (82 percent) lacked a teaching assistant for their classes.

Undergraduate teaching loads varied across institutions. Instructional faculty and staff at 4-year doctoral institutions had lighter undergraduate teaching loads than their colleagues at 4-year nondoctoral institutions, who in turn had lighter loads than those at 2-year institutions. Undergraduate teaching loads also differed by employment status. As would be expected, full-time instructional faculty and staff had higher undergraduate teaching loads than their part-time colleagues. In addition, undergraduate teaching loads were also related to other faculty characteristics such as academic rank, tenure status, and highest degree. In general, at both types of 4-year institutions, as academic rank (e.g., full professors), tenure status (e.g., tenured), or degree attainment (e.g., a doctoral or first-professional degree) rose, undergraduate teaching loads became lighter.

What Kinds of Teaching Practices Did Faculty Use in Their Undergraduate Classes?

Instructional faculty and staff with classroom instruction duties were asked about the primary method of instruction used for up to five classes taught. According to their responses, faculty used lecture/discussion most frequently in their undergraduate instruction. In fall 1998, 83 percent of instructional faculty and staff who taught undergraduate classes reported using lecture/discussion as their primary instructional method in at least one undergraduate class taught. Compared with lecture/discussion, other methods were used less frequently for undergraduate instruction: 21 percent of faculty reported that they primarily used labs or clinics; 11 percent identified seminars as their main instructional format; and only 5 percent used field work, such as internships and apprenticeships, in one or more of their undergraduate classes. While lecture/discussion was popular in all teaching fields, faculty's use of other instructional methods was related to their teaching field.

Instructional faculty and staff also used various methods to assign work in their classrooms. About 60 percent of instructional faculty and staff who taught undergraduate classes indicated that they assigned term or research papers in some or all of these classes; 44 percent asked students to evaluate each other's work; and 40 percent asked students to submit multiple drafts of written work. To assess students, 62 percent of instructional faculty and staff who taught under-

graduate classes used a short-answer format for midterm/final exams in some or all of their classes; 60 percent used essay exams; and 58 percent used multiple-choice exams. For grading student performance, instructional faculty and staff were more likely to use competency-based grading than grading on a curve (61 percent vs. 30 percent).

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Appendix A—Glossary

This glossary describes the variables used in this report. The items were taken directly from the NSOPF:99 Data Analysis Systems (DAS); see appendix B for a description of the DAS. The variables used in this analysis were either items taken directly from the surveys or derived by combining one or more items in these surveys.

The variables listed in the index below are in the order they appear in the report; the glossary is in alphabetical order by DAS variable name displayed along the right-hand column.

GLOSSARY INDEX

FACULTY CHARACTERISTICS	DAS VARIABLES
Type of institution	X08Z0
Employment status	Q5
Gender	Q81
Race/ethnicity	X03Z84
Age	X03Z82
Academic rank	X01Z8
Tenure status	Q10
Highest degree obtained	X01Z16
Principal field of teaching	X02Z14

WHO TAUGHT UNDERGRADUATES IN U.S. POSTSECONDARY INSTITUTIONS?

From the Institution Questionnaire:

Percentage of undergraduate student credit hours assigned to full-time faculty or instructional staff	C26A
Percentage of undergraduate student credit hours assigned to part-time faculty or instructional staff	C26B
Percentage of undergraduate student credit hours assigned to teaching assistants	C26C
Percentage of undergraduate student credit hours assigned to others	C26D

From the Faculty Questionnaire:

Involved in any undergraduate teaching activities	Q31A1
Provided at least one form of instruction to undergraduates	X72Z41
Taught undergraduate classes for credit	X64Z41
Provided individual instruction to undergraduates	Q49A1
Served on undergraduate academic committees	Q32A1
Taught only undergraduate classes	X06Z41

TEACHING LOADS	DAS VARIABLES
Percentage of work time spent on teaching undergraduate students	Q31A1
Percentage of work time spent on teaching graduate /first-professional students	Q31A2
Percentage of work time spent on research/ scholarship	Q31A3
Percentage of work time spent on administration	Q31A5
Percentage of work time spent on other activities	X03Z31
Total number of undergraduate classes taught for credit	X07Z41
Total number of undergraduate classroom credit hours	X46Z41
Total number of hours per week spent in the classroom teaching undergraduates	X48Z41
Total number of undergraduates taught in the classroom	X56Z41
Total number of classroom contact hours with undergraduates per week	X52Z41
Had teaching assistants in some or all of undergraduate classes taught	X66Z41

INSTRUCTIONAL METHODS USED

Used lecture/discussion in some or all of undergraduate classes taught	X67Z41
Used seminar in some or all of undergraduate classes taught	X68Z41
Used lab/clinic in some or all of undergraduate classes taught	X69Z41
Used apprenticeship/field work in some or all of undergraduate classes taught	X70Z41
Used student evaluations in some or all of undergraduate classes taught	Q42A

Used term/research papers in some or all of undergraduate classes taught Q42E
Used multiple written drafts in some or all of undergraduate classes taught Q42F
Used multiple-choice exams in some or all of undergraduate classes taught Q42B
Used short-answer exams in some or all of undergraduate classes taught Q42D
Used essay exams in some or all of undergraduate classes taught Q42C
Used grading on a curve in some or all of undergraduate classes taught Q42G
Used competency-based grading in some or all of undergraduate classes taught Q42H

Percentage of undergraduate student credit hours assigned to the following staff:

Full-time faculty or instructional staff	**C26A**
Part-time faculty or instructional staff	**C26B**
Teaching assistants	**C26C**
Others	**C26D**

Institution response to the question "What percentage of undergraduate student credit hours were assigned to the following staff?" (Four groups of staff were identified, including full-time faculty or instructional staff, part-time faculty or instructional staff, teaching assistants, and other staff).

Employment status **Q5**

Faculty response to the question "During the 1998 Fall Term, did this institution consider you to be employed part-time or full-time?"

Part-time
Full-time

Tenure status **Q10**

Faculty response to the question "What was your tenure status at this institution during the 1998 Fall Term?"

Tenured
On tenure track but not tenured
Not on tenure track, although institution has a tenure system
No tenure system at this institution

Percentage of work time spent on teaching undergraduate students **Q31A1**

Faculty response to the question "What percent of time did you spend on teaching undergraduate students (including teaching; grading papers; preparing courses; developing new curricula; advising or supervising students; supervising student teachers and interns; working with student organizations or intramural athletics)?"

Percentage of work time spent on teaching graduate/first-professional students **Q31A2**

Faculty response to the question "What percent of time did you spend on teaching graduate or first-professional students (including teaching; grading papers; preparing courses; developing new curricula; advising or supervising students; supervising student teachers and interns; working with student organizations or intramural athletics)?"

Percentage of work time spent on research/scholarship **Q31A3**

Faculty response to the question "What percent of time did you spend on research/scholarship (including research; reviewing or preparing articles or books; attending or preparing for professional meetings or conferences; reviewing proposals; seeking outside funding; giving performances or exhibitions in the fine or applied arts; or giving speeches)?"

Percentage of work time spent on administration **Q31A5**

Faculty response to the question "What percent of time did you spend on administration (including departmental or institution-wide meetings or committee work)?"

Served on undergraduate academic committees **Q32A1**

Faculty response to the question "During the 1998 Fall Term, how many undergraduate thesis committees, comprehensive exams or orals committees, or examination or certification committees did you serve on?" Those who responded serving at least one undergraduate committee were combined into one category and those who responded none were combined into another group.

One or more undergraduate committees
None

Used student evaluations in some or all of undergraduate classes taught **Q42A**

Faculty response to the question "In how many of the undergraduate courses that you taught for credit during the 1998 Fall Term did you use student evaluations of each other's work?" Categories of "some" and "all" were merged into one category.

Some/all
None

Used multiple-choice exams in some or all of undergraduate classes taught **Q42B**

Faculty response to the question "In how many of the undergraduate courses that you taught for credit during the 1998 Fall Term did you use multiple-choice midterm and/or final exam?" Categories of "some" and "all" were merged into one category.

Some/all
None

Used essay exams in some or all of undergraduate classes taught **Q42C**

Faculty response to the question "In how many of the undergraduate courses that you taught for credit during the 1998 Fall Term did you use essay midterm and/or final exams?" Categories of "some" and "all" were merged into one category.

Some/all
None

Used short-answer exams in some or all of undergraduate classes taught **Q42D**

Faculty response to the question "In how many of the undergraduate courses that you taught for credit during the 1998 Fall Term did you use short-answer midterm and/or final exams?" Categories of "some" and "all" were merged into one category.

Some/all
None

Used term/research papers in some or all of undergraduate classes taught **Q42E**

Faculty response to the question "In how many of the undergraduate courses that you taught for credit during the 1998 Fall Term did you use term/research papers?" Categories of "some" and "all" were merged into one category.

Some/all
None

Used multiple written drafts in some or all of undergraduate classes taught **Q42F**

Faculty response to the question "In how many of the undergraduate courses that you taught for credit during the 1998 Fall Term did you use multiple drafts of written work?" Categories of "some" and "all" were merged into one category.

Some/all
None

Used grading on a curve in some or all of undergraduate classes taught **Q42G**

Faculty response to the question "In how many of the undergraduate courses that you taught for credit during the 1998 Fall Term did you use grading on a curve?" Categories of "some" and "all" were merged into one category.

Some/all
None

Used competency-based grading in some or all of undergraduate classes taught **Q42H**

Faculty response to the question "In how many of the undergraduate courses that you taught for credit during the 1998 Fall Term did you use competency-based grading?" Categories of "some" and "all" were merged into one category.

Some/all
None

Provided individual instruction to undergraduates **Q49A1**

Faculty response to the question "How many undergraduate students received individual instruction from you during the 1998 Fall Term (e.g., independent study; supervising student teachers or interns; or one-on-one instruction, including working with individual students in a clinical or research setting)?" Those who responded providing

individual instruction to at least one undergraduate student were combined into one category and those who responded none were combined into another group.

One or more undergraduate students
None

Gender **Q81**

Faculty response to the question "Are you male or female?"

Male
Female

Academic rank **X01Z8**

Identifies a respondent's academic rank, title, or position at the sampled institution or to identify the fact that ranks were not assigned. "Other ranks" and "Not applicable" were merged into one category.

Full professor
Associate professor
Assistant professor
Instructor or lecturer
Other ranks or not applicable

Highest degree obtained **X01Z16**

Identifies the highest degree attained by a respondent. Three categories were formed.

Doctoral or first-professional degree
Master's degree
Bachelor's degree or lower

Principal field of teaching **X02Z14**

Identifies the general program area of a respondent's principal field of teaching:

Agriculture/home economics	Includes agriculture-unspecified, agribusiness, agricultural sciences, renewable resources, other agriculture, and home economics.
Business	Includes business-unspecified, accounting, banking and finance, business administration and management, business administrative support, human resources development, organizational behavior, marketing and distribution, and other business.

Education	Includes education-unspecified, general education, basic skills, bilingual and cross-cultural education, curriculum and instruction, education administration, education evaluation and research, educational psychology, special education, student counseling and personnel, other education, teacher education-unspecified, pre-elementary, elementary, secondary, adult and continuing, other general teacher education programs and teacher education in specific subjects.
Engineering	Includes engineering-unspecified, general, civil, mechanical, chemical, and other engineering, and engineering-related technologies.
Fine arts	Includes art-unspecified, art history and appreciation, crafts, dance, design, dramatic arts, film arts, fine arts, music, music history and appreciation, and other visual or performing arts.
Health sciences	Includes health sciences-unspecified, allied health technologies, dentistry, health services administration, medicine, nursing, pharmacy, public health, veterinary medicine, and other health sciences.
Humanities	Includes English and literature-unspecified, general English, composition, American literature, English literature, linguistics, speech, English as second language, other English, foreign languages-unspecified, Chinese, French, German, Italian, Latin, Japanese, other Asian, Russian, Spanish, other foreign languages, philosophy and religion, and history.
Natural sciences	Includes computer science-unspecified, computer and information sciences, computer programming, data processing, systems analysis, other computer science, biological sciences-unspecified, biochemistry, biology, botany, genetics, immunology, microbiology, physiology, zoology, other biological sciences, physical sciences-unspecified, astronomy, chemistry, physics, geological sciences, other physical sciences, mathematics, and statistics.
Social sciences	Includes psychology, social sciences-unspecified, general social sciences, anthropology, archeology, area and ethnic studies, demography, economics, geography, international relations, political science, sociology, and other social sciences.
All other fields	Includes architecture, communications, industrial arts, law, library and archival sciences, military studies, multi-interdisciplinary studies, parks and recreation, theology, protective services, public affairs, science technologies, vocational training-unspecified, construction trades, consumer services, mechanics and repairers, precision production, transportation, and other.

Percentage of work time spent on other activities **X03Z31**

Identifies the actual percentage of work time a respondent spent on activities other than teaching, research, or administration during the 1998 Fall Term.

Age **X03Z82**

Indicates a respondent's age:

Under 35
35–44
45–54
55–64
65 or older

Race/ethnicity **X03Z84**

This derived variable was created to categorize individuals into one and only one racial/ethnic category. In 1988 and 1993, respondents were asked to pick only one race category to identify themselves. They also were asked to identify if they were of Hispanic origin. In 1999, respondents were asked to pick one or more race categories to identify themselves. They also were asked to identify if they were of Hispanic origin. Very few individuals picked more than one racial/ethnic category (about 1 percent). For those individuals who picked more than one racial/ethnic category, a coding scheme was devised to place them into one and only one racial/ethnic category. If the respondents identified themselves as Hispanic and Black or Hispanic and White, they were coded as Hispanic. Otherwise, they were coded according to the following scheme: If the respondents indicated they were Black or African American and any other race, they were coded as Black. If they were Asian or Pacific Islander and any other race (except for Black), they were coded as Asian. If they were Native American or Alaska Native and any other race (except for Black or Asian), they were coded as Native American. This variable has the following categories:

American Indian or Alaska Native
Asian or Pacific Islander
Black, non-Hispanic
Hispanic
White, non-Hispanic

Taught only undergraduate classes **X06Z41**

Indicates a respondent's level of classroom instruction. Detailed information about classes could be reported for a maximum of five classes by each respondent.

Undergraduate	Faculty who taught classes for credit to undergraduates only.
Both	Faculty who taught classes for credit to both undergraduate and graduate or first-professional students.
Graduate	Faculty who taught classes for credit to graduate or first-professional students only.

Total number of undergraduate classes taught for credit **X07Z41**

Indicates the total number of undergraduate classes taught for credit during the 1998 fall term. Detailed information about classes could be reported for a maximum of five classes by each respondent. Classes where the primary level of students was graduate or first-professional were excluded from the calculation.

Type of institution **X08Z0**

Indicates the control of and type of degree offered at institution where respondent taught. "4-year public doctoral" and "4-year private doctoral" were merged into one category. "4-year public nondoctoral" and "4-year private nondoctoral" were combined into the second category. "2-year public" and "2-year private" were combined into the third category.

4-year doctoral
4-year nondoctoral
2-year

Total number of undergraduate classroom credit hours **X46Z41**

Provides a calculation of the total number of undergraduate classroom credit hours reported by adding together the number of credit hours for each undergraduate class. Detailed information about classes could be reported for a maximum of five classes by each respondent. Classes where the primary level of students was graduate or first-professional were excluded from the calculation.

Total number of hours per week spent in the classroom teaching undergraduates **X48Z41**

Provides a calculation of the total number of hours a respondent spent teaching per week in five or fewer undergraduate classes for credit by adding together the number of hours the respondent spent teaching each undergraduate class. Detailed information about classes could be reported for a maximum of five classes by each respondent. Classes where the primary level of students was graduate or first-professional were excluded from the calculation.

Total number of classroom contact hours with undergraduates per week **X52Z41**

Provides a calculation of the total undergraduate student contact hours per week with students in five or fewer undergraduate classes for credit. For each undergraduate class taught for credit, the average number of hours per week the respondent taught the class was multiplied by the number of students enrolled in the class. The results were added together to obtain the total student contact hours in five or fewer undergraduate classes for credit. Classes where the primary level of students was graduate or first-professional were excluded from the calculation.

Total number of undergraduates taught in the classroom **X56Z41**

Provides a calculation of the total number of undergraduate students taught for credit by adding together the number of undergraduate students reported for each class. Detailed information about classes could be reported for a maximum of five classes by each respondent. Classes where the primary level of students was graduate or first-professional were excluded from the calculation.

Taught undergraduate classes for credit **X64Z41**

Identifies whether or not a respondent taught at least one class for credit to undergraduates.

No
Yes

Had teaching assistants in some or all of undergraduate classes taught **X66Z41**

Identifies whether a respondent had teaching assistants in none, some, or all of undergraduate classes taught. Detailed information about classes could be reported for a maximum of five classes by each respondent. Classes where the primary level of students was graduate or first-professional were excluded from the calculation. Categories of "some" and "all" were combined into one category.

Some/all
None

Used lecture/discussion in some or all of undergraduate classes taught **X67Z41**

Identifies whether a respondent used lecture/discussion as a primary instructional method in none, some, or all of undergraduate classes taught. Detailed information about classes could be reported for a maximum of five classes by each respondent. Classes where the primary level of students was graduate or first-professional were excluded from the calculation. Categories of "some" and "all" were combined into one category.

Some/all
None

Used seminar in some or all of undergraduate classes taught **X68Z41**

Identifies whether a respondent used seminar as a primary instructional method in none, some, or all of undergraduate classes taught. Detailed information about classes could be reported for a maximum of five classes by each respondent. Classes where the primary level of students was graduate or first-professional were excluded from the calculation. Categories of "some" and "all" were combined into one category.

Some/all
None

Used lab/clinic in some or all of undergraduate classes taught **X69Z41**

Identifies whether a respondent used lab/clinic as a primary instructional method in none, some, or all of undergraduate classes taught. Detailed information about classes could be reported for a maximum of five classes by each respondent. Classes where the primary level of students was graduate or first-professional were excluded from the calculation. Categories of "some" and "all" were combined into one category.

Some/all
None

Used apprenticeship/field work in some or all of undergraduate classes taught **X70Z41**

Identifies whether a respondent used apprenticeship/field work as a primary instructional method in none, some, or all of undergraduate classes taught. Detailed information about classes could be reported for a maximum of five classes by each respondent. Classes where the primary level of students was graduate or first-professional were excluded from the calculation. Categories of "some" and "all" were combined into one category.

Some/all
None

Provided at least one form of instruction to undergraduates **X72Z41**

Identified whether a respondent provided at least one form of instruction (i.e., classroom instruction, individual instruction, and academic committee work) to undergraduate students in the 1998 Fall Term.

Yes
No

Appendix B—Technical Notes

The 1999 National Study of Postsecondary Faculty (NSOPF:99)

The 1999 National Study of Postsecondary Faculty (NSOPF:99) was sponsored by the U.S. Department of Education's National Center for Education Statistics (NCES). The Gallup Organization conducted the third cycle of NSOPF, which included 960 degree-granting postsecondary institutions and an initial sample of 28,704 faculty and instructional staff from these institutions. Subsequently, a subsample of 19,813 faculty and instructional staff was drawn for intensive follow-up interview. NSOPF:99 was designed to provide a national profile of faculty, including their professional backgrounds, responsibilities, workloads, salaries, benefits, and attitudes. This third cycle followed the first NSOPF, conducted in 1987–88, with a sample of 480 institutions (including 2-year, 4-year, doctorate-granting, and other colleges and universities), more than 3,000 department chairpersons, and more than 11,000 faculty; and the second NSOPF, conducted in 1992–93, with a sample of 974 public and private not-for-profit degree-granting postsecondary institutions and 31,354 faculty and instructional staff. Additional information on the first two cycles of NSOPF is available at the NCES Web Site (*http://nces.ed.gov/surveys/nsopf/*).

A two-stage stratified, clustered probability design was used to select the NSOPF:99 sample. The institution universe for NSOPF:99 was defined by the following criteria: Title IV institutions;[33] public and private not-for-profit institutions;[34] institutions that conferred associate, bachelor's, or advanced degrees; and institutions that were located in the United States. This definition covered most colleges (including junior and community colleges), universities, and graduate and professional schools. It excluded institutions that either offered only less-than-2-year programs; were private for-profit; or were located outside the United States (e.g., in U.S. territories). In addition, it excluded institutions that offered instruction only to employees of the institutions, tribal colleges, and institutions that offered only correspondence courses. According to the NCES Integrated Postsecondary Education Data System (IPEDS), 3,396 institutions met these criteria and were eligible for the NSOPF:99 sample. The first-stage sampling frame consisted of this group of institutions, stratified based on the highest degrees offered and the amount

[33]The U.S. Department of Education is no longer distinguishing among institutions based on accreditation level. As a result, NCES now subdivides the postsecondary institution universe into schools that receive Title IV federal financial assistance and those that do not.

[34]Private for-profit institutions are not included even though they may be Title IV institutions.

of federal research dollars received. The strata distinguished public and private institutions, as well as several types of institutions based on the Carnegie Foundation's classification system.[35]

Each institution was asked to complete an Institution Questionnaire and to provide a list of all faculty and instructional staff at their institution. Unlike NSOPF:88, which was limited to faculty whose assignment included instruction, the faculty universes for NSOPF:93 and NSOPF:99 were expanded to include all those who were designated as faculty, whether or not their responsibilities included instruction, and other (nonfaculty) personnel with instructional responsibilities. Under this definition, researchers, administrators, and other institutional staff who hold faculty positions, but who do not teach, were included in the sample. Instructional staff without faculty status also were included. Teaching assistants were not included in any cycle of NSOPF.[36] Institution coordinators were asked to provide a list of these full- and part-time faculty and instructional staff who had faculty status or instructional responsibilities during the 1998 fall term (i.e., the term that included November 1, 1998).

Of the 960 institutions in the sample, one was ineligible because it had merged with another institution. A total of 818 institutions provided lists of faculty and instructional staff, for a weighted list participation rate of 88.4 percent. A total of 865 institutions returned the institution questionnaire, for a weighted response rate of 92.8 percent. Initially, 28,576 faculty and instructional staff were selected from institutions that provided a list of their faculty and instructional staff. Subsequently, a subsample of 19,813 faculty and instructional staff was drawn for intensive followup. Approximately 18,000 faculty and instructional staff questionnaires were completed, for a weighted response rate of 83.0 percent. The overall weighted faculty response rate (institution list participation rate multiplied by the faculty questionnaire response rate) was 73.4 percent.

Faculty nonresponse bias analyses indicated no significant bias. Item nonresponse occurred when a respondent did not answer one or more survey questions. The item nonresponse rates were generally low for the faculty questionnaire. For more information about NSOPF:99, including a full description of faculty and item nonresponse, see the *1999 National Study of Postsecondary Faculty: Methodology Report* (NCES 2002–154).

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[35]See The Carnegie Foundation for the Advancement of Teaching, *A Classification of Institutions of Higher Education* (Princeton, NJ: 1994).

[36]However, the institution survey of NSOPF:99 added one question pertinent to teaching assistants, which asked institution respondents to estimate the percentage of undergraduate student credit hours assigned to teaching assistants. This question allows exploration of the issue of using teaching assistants in undergraduate education.

Study Sample

The base sample of this report consisted of faculty and staff who reported that they had had some instructional duties for credit during the 1998 fall term at the sam :d institutions.[37] Among an estimated total of 1,074,000 faculty members employed nationwide in colleges and universities, about 976,000 (91 percent) were identified as instructional faculty and staff. These individuals became the population represented in the first section of the report. Of the 976,000 instructional faculty and staff, and 751,000 reported teaching one or more undergraduate classes for credit. This subgroup of instructional faculty and staff became the population represented in the second and third sections of the report that examined the undergraduate teaching loads of faculty who taught undergraduates in fall 1998 and various teaching practices they used for their undergraduate teaching.

This report focuses one of the most common forms of instruction for undergraduate faculty and staff—classroom instruction. Although relatively less common, faculty members also used other forms to deliver instruction to undergraduates, such as providing individual instruction or serving on academic committees. Tables B1 and B2 present the data regarding the extent to which various types of instructional faculty and staff providing these two types of instruction to undergraduates in fall 1998.

Accuracy of Estimates

The statistics in this report are estimates derived from a sample. Two broad categories of error occur in such estimates: sampling and nonsampling errors. Sampling errors occur because observations are made only on samples of students, not on entire populations. Surveys of population universes are not subject to sampling errors. Estimates based on a sample will differ somewhat from those that would have been obtained by a complete census of the relevant population using the same survey instruments, instructions, and procedures. The standard error of a statistic is a measure of the variation due to sampling; it indicates the precision of the statistic obtained in a particular sample. In addition, the standard errors for two sample statistics can be used to estimate the precision of the difference between the two statistics and to help determine whether the difference based on the sample is large enough so that it represents the population difference.

[37]Instructional duties include teaching credit courses or supervising students' academic activities for credit.

Table B1.—Percentage of instructional faculty and staff who provided individual instruction to undergraduates, by type of institution, employment status, and demographic and academic characteristics of instructional faculty and staff: Fall 1998

Demographic and academic characteristics of instructional faculty and staff	Total		4-year doctoral		4-year nondoctoral		2-year	
	Part time	Full time	Part time	Full time	Part time	Full time	Part time	Full time
Total	37.4	45.1	29.9	37.6	36.8	51.8	41.8	50.7
Gender								
Male	34.4	43.7	24.3	37.5	33.1	50.0	41.3	49.4
Female	40.6	47.7	36.7	37.9	40.8	55.0	42.3	52.0
Race/ethnicity								
American Indian/Alaska Native	52.0	60.8	(#)	49.1	(#)	69.0	(#)	(#)
Asian/Pacific Islander	48.0	41.6	27.6	31.7	54.2	56.1	48.2	60.0
Black, non-Hispanic	40.5	48.4	33.8	48.0	33.3	51.8	47.7	41.7
Hispanic	42.1	46.1	42.3	35.6	35.6	58.6	45.2	51.5
White, non-Hispanic	36.5	45.0	28.5	37.7	36.0	51.2	41.2	50.8
Age								
Under 35	41.0	46.3	42.5	39.2	42.3	49.4	39.0	58.8
35–44	37.2	46.8	27.5	38.9	40.7	57.2	40.2	50.0
45–54	35.6	45.0	26.6	35.6	31.1	51.3	42.7	53.7
55–64	40.2	44.7	33.8	39.1	38.4	50.0	45.0	46.6
65 or older	34.0	38.3	25.5	34.7	36.3	44.2	39.7	36.3
Academic rank*								
Full professor	31.9	41.2	25.5	35.7	23.8	47.6	49.5	45.7
Associate professor	34.2	45.0	15.8	37.4	47.3	54.1	59.8	50.2
Assistant professor	27.0	47.5	20.5	39.4	33.6	55.2	31.9	54.3
Instructor or lecturer	39.9	48.4	35.3	37.5	39.9	50.8	41.5	53.2
Tenure status								
Tenured	35.6	44.5	27.7	38.6	31.7	51.4	62.1	47.4
On tenure track	35.8	49.6	(#)	41.7	(#)	55.8	48.9	57.0
Not on tenure track	38.2	39.5	30.7	33.1	38.3	47.8	43.0	52.0
No tenure system	33.8	50.3	24.9	22.3	29.1	52.6	36.8	52.9
Highest degree obtained								
Doctoral/first-professional degree	23.9	40.6	20.9	35.1	24.1	48.9	31.0	44.8
Master's	39.6	53.7	36.9	51.8	40.5	57.6	39.8	51.2
Bachelor's or less	50.1	57.1	50.8	55.7	51.1	63.8	49.6	55.7

See footnotes at end of table.

Table B1.—Percentage of instructional faculty and staff who provided individual instruction to undergraduates, by type of institution, employment status, and demographic and academic characteristics of instructional faculty and staff: Fall 1998—Continued

Demographic and academic characteristics of instructional faculty and staff	Total		4-year doctoral		4-year nondoctoral		2-year	
	Part time	Full time	Part time	Full time	Part time	Full time	Part time	Full time
Principal field of teaching								
Agriculture and home economics	44.9	54.9	(#)	47.5	(#)	55.4	(#)	83.4
Business	31.1	39.1	23.7	33.0	26.0	39.6	38.7	44.9
Education	38.6	47.9	48.8	34.7	32.1	53.1	41.6	56.9
Engineering	30.1	48.1	11.7	45.0	(#)	49.6	51.8	63.9
Fine arts	58.7	72.3	52.8	66.0	62.5	75.6	57.1	75.5
Health sciences	30.8	30.6	17.0	18.0	37.1	41.7	45.3	70.7
Humanities	35.1	47.0	32.4	46.0	36.6	53.3	35.0	36.1
Natural sciences	39.0	45.3	27.3	41.5	35.0	51.9	43.5	44.0
Social sciences	34.1	48.3	34.5	48.7	28.7	50.8	39.0	39.5
All other programs	34.0	45.0	27.7	35.9	31.7	49.8	39.9	51.7

#Too small to report.

*Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes all instructional faculty and staff.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Nonsampling errors occur not only in sample surveys but also in complete censuses of entire populations. Nonsampling errors can be attributed to a number of sources: inability to obtain complete information about all faculty and staff in all institutions in the sample (some faculty members or institutions refused to participate, or faculty participated but answered only certain items); ambiguous definitions; differences in interpreting questions; inability or unwillingness to give correct information; mistakes in recording or coding data; and other errors of collecting, processing, sampling, and imputing missing data. Although nonsampling errors due to questionnaire and item nonresponse can be reduced somewhat by the adjustment of sample weights and imputation procedures, correcting nonsampling errors or gauging the effects of these errors is usually difficult.

Table B2.—Percentage of instructional faculty and staff who served on undergraduate academic committees, by type of institution, employment status, and demographic and academic characteristics of instructional faculty and staff: Fall 1998

Demographic and academic characteristics of instructional faculty and staff	Total		4-year doctoral		4-year nondoctoral		2-year	
	Part time	Full time	Part time	Full time	Part time	Full time	Part time	Full time
Total	10.7	22.6	11.3	20.9	10.6	27.0	10.5	18.4
Gender								
Male	10.9	22.9	11.4	21.3	11.8	27.0	9.9	18.3
Female	10.5	22.0	11.3	19.9	9.4	26.9	11.1	18.5
Race/ethnicity								
American Indian/Alaska Native	23.1	27.2	(#)	16.9	(#)	35.6	(#)	(#)
Asian/Pacific Islander	8.1	25.2	9.9	24.5	6.7	27.7	8.0	22.3
Black, non-Hispanic	15.3	30.7	10.1	23.2	20.7	40.9	13.2	19.6
Hispanic	10.8	22.8	9.3	20.2	4.8	25.3	14.3	24.8
White, non-Hispanic	10.4	21.8	11.4	20.5	10.4	25.8	9.8	17.7
Age								
Under 35	8.0	15.3	8.8	17.1	7.6	16.6	8.0	8.2
35–44	9.0	21.4	9.2	18.5	8.7	27.9	9.2	16.9
45–54	12.2	22.8	9.9	20.0	11.4	28.1	13.7	20.0
55–64	10.0	24.6	18.3	25.4	9.1	27.3	6.2	17.9
65 or older	15.1	25.9	11.6	23.4	19.2	27.3	13.6	32.4
Academic rank*								
Full professor	21.8	25.3	15.8	23.6	22.4	28.2	29.1	24.0
Associate professor	13.2	24.3	13.6	22.0	14.5	28.2	8.7	21.5
Assistant professor	13.1	25.2	11.2	19.9	15.0	31.7	14.3	22.8
Instructor or lecturer	10.1	14.7	11.3	13.5	10.4	14.1	9.6	15.8
Tenure status								
Tenured	28.3	25.3	26.1	23.8	36.5	28.7	16.6	23.0
On tenure track	22.2	25.4	(#)	23.0	(#)	30.8	31.6	18.9
Not on tenure track	10.5	14.2	10.4	12.7	9.7	17.3	11.2	12.0
No tenure system	6.8	17.5	4.7	13.0	8.1	26.8	6.5	11.6
Highest degree obtained								
Doctoral/first-professional degree	11.2	23.9	11.3	21.3	10.8	29.1	11.7	17.9
Master's	10.4	20.7	11.0	19.5	10.1	23.1	10.4	19.1
Bachelor's or less	10.9	15.2	13.3	9.8	12.5	14.3	10.0	16.7

See footnotes at end of table.

Table B2.—Percentage of instructional faculty and staff who served on undergraduate academic committees, by type of institution, employment status, and demographic and academic characteristics of instructional faculty and staff: Fall 1998—Continued

Demographic and academic characteristics of instructional faculty and staff	Total		4-year doctoral		4-year nondoctoral		2-year	
	Part time	Full time	Part time	Full time	Part time	Full time	Part time	Full time
Principal field of teaching								
Agriculture and home economics	16.7	15.5	(#)	12.4	(#)	27.8	(#)	14.4
Business	6.0	20.3	6.2	15.7	7.0	23.4	5.0	20.7
Education	7.2	19.7	8.3	15.6	7.1	23.1	6.5	14.4
Engineering	8.6	25.1	13.8	24.9	(#)	27.4	4.9	22.4
Fine arts	15.8	32.5	21.7	33.5	17.1	38.9	10.2	13.5
Health sciences	11.9	13.8	5.2	10.5	25.3	18.5	13.0	22.4
Humanities	8.8	29.0	9.4	35.7	6.5	30.3	10.3	15.6
Natural sciences	9.5	22.2	11.0	20.9	11.6	27.6	8.1	16.4
Social sciences	18.7	30.2	25.5	30.8	9.7	34.1	23.4	16.5
All other programs	9.7	19.2	11.2	18.1	8.8	18.5	9.5	22.0

#Too small to report.

*Included in the total but not shown separately were those with other or no academic rank.

NOTE: This table includes all instructional faculty and staff.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

Data Analysis System

Most estimates presented in this report were produced using the NSOPF:99 Data Analysis System (DAS).[38] The DAS software makes it possible for users to specify and generate their own tables from the NSOPF:99 data. With the DAS, users can replicate or expand upon the tables presented in this report. In addition to the table estimates, the DAS calculates proper standard errors[39] and weighted sample sizes for these estimates. For example, table B3 contains

[38]However, estimates presented in table 2 were computed with the SUDAAN program software because there is no DAS for the institution survey. The standard errors for estimates produced by SUDAAN were based on the Taylor-series approximation method. For more information about the SUDAAN program software, see the *SUDAAN Users Manual* (Shah, Barnwell, and Bieler 1995).

[39]The NSOPF:99 samples are not simple random samples, and therefore simple random sample techniques for estimating sampling error cannot be applied to these data. The DAS takes into account the complexity of the sampling procedures and calculates standard errors appropriate for such samples. The method for computing sampling errors used by the DAS involves approximating the estimator by the linear terms of a Taylor series expansion. The procedure is typically referred to as the Taylor series method.

Table B3.—Standard errors for table 3: Percentage of instructional faculty and staff who were involved in undergraduate instruction, by type of instruction, institution, and employment status: Fall 1998

Type of institution and employment status	Involved in any undergraduate-related teaching activities[1]	Provided instruction to undergraduates			
		Total[2]	Classroom instruction[3]	Individual instruction[4]	Academic committee work[5]
Total	0.72	0.78	0.88	0.74	0.45
Part time	0.98	1.08	1.24	1.13	0.65
Full time	0.80	0.86	0.99	0.80	0.60
4-year doctoral institution	1.21	1.29	1.41	1.04	0.73
Part time	2.41	2.65	3.06	1.77	1.11
Full time	1.23	1.31	1.43	1.11	0.89
4-year nondoctoral institution	1.32	1.37	1.48	1.35	0.80
Part time	1.83	1.87	1.97	1.88	1.02
Full time	1.19	1.23	1.39	1.43	1.11
2-year institution	0.20	0.47	0.65	1.30	0.81
Part time	0.28	0.74	1.01	1.82	1.15
Full time	0.26	0.35	0.52	1.30	1.04

[1]The percentage was based on the respondent's report of the percentage of total work time they devoted to undergraduate teaching activities per week. If the percentage was greater than "0," the respondent was considered to be involved in undergraduate teaching. "Undergraduate teaching activities" were defined broadly in the survey and included teaching classes, grading papers, preparing courses, developing new curricula, advising or supervising students, supervising student teachers and interns, and working with student organizations or intramural athletics.

[2]Providing at least one type of instruction to undergraduates, including classroom instruction, individual instruction, and committee work.

[3]Teaching one or more undergraduate classes for credit.

[4]Examples of individual instruction include independent study, supervising student teachers or interns, or one-on-one instruction such as working with individual students in a clinical or research setting.

[5]Examples of undergraduate academic committees include thesis honors committees, comprehensive exams or orals committees, and examination/certification committees.

NOTE: This table includes all instructional faculty and staff.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1999 National Study of Postsecondary Faculty (NSOPF:99), "Faculty Survey."

standard errors that correspond to table 3 in this report, and was generated by the DAS.[40] If the number of valid cases is too small to produce a reliable estimate (less than 30 cases), the DAS prints the message "low-N" instead of the estimate.

[40]A complete set of standard error tables for all estimates reported and the parameter files used to create these estimates from the DAS are available at http://nces.ed.gov/DAS.

In addition to tables, the DAS will also produce a correlation matrix of selected variables to be used for linear regression models. Included in the output with the correlation matrix are the design effects (DEFTs) for each variable in the matrix. Since statistical procedures generally compute regression coefficients based on simple random sample assumptions, the standard errors must be adjusted with the design effects to take into account the NSOPF:99 stratified sampling method.

The DAS can be accessed electronically at *http://nces.ed.gov/DAS*. For more information about the NSOPF:99 Data Analysis System, contact:

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Statistical Procedures

Two types of statistical procedures were employed in this report: testing differences between means (or proportions) and testing for linear trends. Each procedure is described below.

Differences Between Means or Proportions

Since the estimates in this report are based on a sample, observed differences between two estimates can reflect either of two possibilities: differences that exist in the population at large and are reflected in the sample, or differences due solely to the composition of the sample that do not reflect underlying population differences. To minimize the risk of erroneously interpreting differences due to sampling alone as signifying population differences (a Type I error), the statistical significance of differences between estimates was tested using a *t*-test. Statistical significance was determined by calculating *t* values for differences between pairs of means or proportions and comparing these with published values of *t* for two-tailed hypothesis testing, using a 5 percent probability of a Type I error (a significance level of .05).[41]

The *t* values may be computed to test the difference between estimates with the following formula:

[41] A Type I error occurs when one erroneously concludes that a difference observed in a sample reflects a true difference in the population from which the sample was drawn.

$$t = \frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2}} \quad (1)$$

where E_1 and E_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors. Note that this formula is valid only for independent estimates. When estimates are not independent, a covariance term must be added to the formula:

$$t = \frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2 - 2(r)\, se_1\, se_2}} \quad (2)$$

where r is the correlation between the two estimates.[42] The estimates and standard errors are obtained from the DAS. If the comparison is between the mean of a subgroup and the mean of the total group, the following formula is used:

$$\frac{E_{sub} - E_{tot}}{\sqrt{se_{sub}^2 + se_{tot}^2 - 2p\, se_{sub}^2}} \quad (3)$$

where p is the proportion of the total group contained in the subgroup.[43] The estimates, standard errors, and correlations can all be obtained from the DAS.

There are hazards in reporting statistical tests for each comparison. First, comparisons based on large t statistics may appear to merit special attention. This can be misleading since the magnitude of the t statistic is related not only to the observed differences in means or percentages but also to the number of sample members in the specific categories used for comparison. Hence, a small difference compared across a large number of sample members would produce a large t statistic.

A second hazard in reporting statistical tests for each comparison occurs when making multiple comparisons between categories of an independent variable. For example, when making paired comparisons between different levels of income, the probability of a Type I error for these comparisons taken as a group is larger than the probability for a single comparison. When more than one difference between groups of related characteristics or "families" are tested for statistical significance, one must apply a standard that assures a level of significance for all of those comparisons taken together.

Comparisons were made in this report only when $p \leq .05/k$ for a particular pairwise comparison, where that comparison was one of k tests within a family. This guarantees both that the

[42]U.S. Department of Education, National Center for Education Statistics, *A Note from the Chief Statistician*, no. 2, 1993.
[43]Ibid.

individual comparison would have $p \leq .05$ and that for k comparisons within a family of possible comparisons, the significance level for all the comparisons would sum to $p \leq .05$.[44]

For example, when comparing males and females, only one comparison is possible. In this family, $k=1$, and there is no need to adjust the significance level. When faculty members are divided into five racial/ethnic groups and all possible comparisons are made, then $k=10$ and the significance level for each test within this family of comparisons must be $p \leq .05/10$, or $p \leq .005$. The formula for calculating family size (k) is as follows:

$$k = \frac{j(j-1)}{2} \tag{4}$$

where j is the number of categories for the variable being tested. For example, in the case of a variable with five categories such as race/ethnicity, one substitutes 5 for j in equation 3:

$$k = \frac{5(5-1)}{2} = 10 \tag{5}$$

Different schools of thought exist on the application of the Bonferroni adjustment: while some would use an experiment-wise calculation of k, where all the dependent variables were considered simultaneously in selecting a critical value, here the calculation of k and the accompanying critical value were restricted to a single dependent variable at a time, since the Bonferroni adjustment is already a conservative strategy.

Linear Trends

While most descriptive comparisons in this report were tested using Student's t statistic, some comparisons across categories of an ordered variable with three or more levels (e.g., faculty's age) involved a test for a linear trend across all categories, rather than a series of tests between pairs of categories. In this report, when averages of a continuous variable were examined relative to a variable with ordered categories, Analysis of Variance (ANOVA) was used to test for a linear relationship between the two variables. To do this, ANOVA models included orthogonal linear contrasts corresponding to successive levels of the independent variable. The squares of the Taylorized standard errors (that is, standard errors that were calculated by the Taylor series method), the variance between the means, and the unweighted sample sizes were used to partition total sum of squares into within- and between-group sums of squares. These were

[44]The standard that $p \leq .05/k$ for each comparison is more stringent than the criterion that the significance level of the comparisons should sum to $p \leq .05$. For tables showing the t statistic required to ensure that $p \leq .05/k$ for a particular family size and degrees of freedom, see Olive Jean Dunn, "Multiple Comparisons Among Means," *Journal of the American Statistical Association* 56 (1961): 52–64.

used to create mean squares for the within- and between-group variance components and their corresponding F statistics, which were then compared with published values of F for a significance level of .05.[45] Significant values of both the overall F and the F associated with the linear contrast term were required as evidence of a linear relationship between the two variables. Means and Taylorized standard errors were calculated by the DAS. Unweighted sample sizes are not available from the DAS and were provided by NCES.

Bivariate Correlations

For the bivariate correlations reported in the report, the strength of the relationships between pairs of variables was provided using a scale of magnitudes. Following Cohen (1988), reported magnitudes adopted the notion of a scale of small, moderate, and large sized relationships, qualitative terms that allow interpretation of the strength of a relationship through the concept of effect size. Cohen suggested that for a scale of the proportion of variance accounted for (the square of the correlation coefficient, r^2), one might use a value of 0.01 to signify a small effect size, 0.09 for moderate, and 0.25 for large. Some latitude is appropriate in determining the scale of effect sizes within the context of the analysis. The magnitudes reported in this report were based on a scale in which the effect is small if r^2 is less than 0.05, moderate if r^2 is at least 0.05 but less than 0.25, and large if r^2 is 0.25 or greater.

Adjustment of Means to Control for Background Variation

Many of the independent variables included in the analyses in this report are related, and to some extent the pattern of differences found in the descriptive analyses reflect this covariation. For example, when examining the proportion of faculty who taught classes for credit to undergraduates, it is impossible to know to what extent the observed variation is due to employment status differences and to what extent it is due to differences in other factors related to employment status, such as type of institution, academic rank held, and so on. However, if nested tables were used to isolate the influence of these other factors, cell sizes would become too small to identify the significant differences in patterns. When the sample size becomes too small to support controls for another level of variation, one must use other methods to take such variation into account. The method used in this report estimates adjusted means with regression models, an approach sometimes referred to as communality analysis.

[45]More information about ANOVA and significance testing using the F statistic can be found in any standard textbook on statistical methods in the social and behavioral sciences.

Multiple linear regression was used to obtain means that were adjusted for covariation among a list of control variables.[46] Each independent variable is divided into several discrete categories. To find an estimated mean value on the dependent variable for each category of an independent variable, while adjusting for its covariation with other independent variables in the equation, substitute the following in the equation: (1) a one in the category's term in the equation, (2) zeroes for the other categories of this variable, and (3) the mean proportions for all other independent variables. This procedure holds the impact of all remaining independent variables constant, and differences between adjusted means of categories of an independent variable represent hypothetical groups that are balanced or proportionately equal on all other characteristics included in the model as independent variables.

For example, consider a hypothetical case in which two variables, gender and employment status, are used to describe an outcome, *Y* (such as whether or not teaching classes for credit to undergraduates). The variables gender and employment status are recoded into dummy variables:

Gender	***G***
Female	1
Male	0

Employment status	***E***
Part-time	1
Full-time	0

The following regression equation is then estimated from the correlation matrix output from the DAS:

$$Y = a + b_1G + b_2E \tag{6}$$

To estimate the adjusted mean for any subgroup evaluated at the mean of all other variables, one substitutes the appropriate values for that subgroup's dummy variables (1 or 0) and the mean for the dummy variable(s) representing all other subgroups. For example, suppose we had a case where *Y* was being described by gender (*G*) and employment status (*E*), coded as shown above, and the means for *G* and *E* are as follows:

Variable	**Mean**
G	0.346
E	0.323

[46]For more information about least squares regression, see Michael S. Lewis-Beck, *Applied Regression: An Introduction*, Vol. 22 (Beverly Hills, CA: Sage Publications, Inc., 1980); William D. Berry and Stanley Feldman, *Multiple Regression in Practice*, Vol. 50 (Beverly Hills, CA: Sage Publications, Inc., 1987).

Suppose the regression equation results in:

$$Y = 0.59 + (0.09)G + (0.12)E$$

To estimate the adjusted value for female faculty members, one substitutes the appropriate parameter values into equation 4.

Variable	Parameter	Value
a	0.59	—
G	0.09	1.000
E	0.12	0.323

This results in:

$$Y = 0.59 + (0.09)(1) + (0.12)(0.323) = 0.719$$

In this case, the adjusted proportion for female faculty is 0.719 and represents the expected outcome for the expected likelihood of teaching undergraduate classes for female faculty who look like average faculty with respect to the other variables in the model (in this example, employment status). In other words, the adjusted percentage of female faculty with tenure, controlling for employment status, is 71.9 percent (0.719 x 100 for conversion to a percentage). In addition to presenting the regression coefficients, their standard errors, and the unadjusted and adjusted percentages for each subgroup, the table of regression results also indicates the multiple R^2, the proportion of the variance in the outcome variable accounted for by all of the variables included in the multivariate model.

It is relatively straightforward to produce a multivariate model using the DAS, since one of the DAS output options is a correlation matrix, computed using pairwise missing values. In regression analysis, there are several common approaches to the problem of missing data. The two simplest are pairwise deletion of missing data and listwise deletion of missing data. In pairwise deletion, each correlation is calculated using all of the cases for the two relevant variables. For example, suppose you have a regression analysis that uses variables X1, X2, and X3. The regression is based on the correlation matrix between X1, X2, and X3. In pairwise deletion the correlation between X1 and X2 is based on the nonmissing cases for X1 and X2. Cases missing on either X1 or X2 would be excluded from the calculation of the correlation. In listwise deletion the correlation between X1 and X2 would be based on the nonmissing values for X1, X2, and

X3. That is, all of the cases with missing data on any of the three variables would be excluded from the analysis.[47]

The correlation matrix can be used by most statistical software packages as the input data for least squares regression. That is the approach used for this report, with an additional adjustment to incorporate the complex sample design into the statistical significance tests of the parameter estimates (described below). For tabular presentation, parameter estimates and standard errors were multiplied by 100 to match the scale used for reporting unadjusted and adjusted percentages.

Most statistical software packages assume simple random sampling when computing standard errors of parameter estimates. Because of the complex sampling design used for the NSOPF survey, this assumption is incorrect. A better approximation of their standard errors is to multiply each standard error by the design effect associated with the dependent variable (DEFT),[48] where the DEFT is the ratio of the true standard error to the standard error computed under the assumption of simple random sampling. It is calculated by the DAS and produced with the correlation matrix output.

[47]Although the DAS simplifies the process of making regression models, it also limits the range of models. Analysts who wish to use other than pairwise treatment of missing values or to estimate probit/logit models (which are the most appropriate for models with categorical dependent variables) can apply for a restricted data license from NCES. See John H. Aldrich and Forrest D. Nelson, *Linear Probability, Logit and Probit Models* (Quantitative Applications in Social Sciences, Vol. 45) (Beverly Hills, CA: Sage University Press, 1984).

[48]The adjustment procedure and its limitations are described in C.J. Skinner, D. Holt, and T.M.F. Smith, eds., *Analysis of Complex Surveys* (New York: John Wiley & Sons, 1989).

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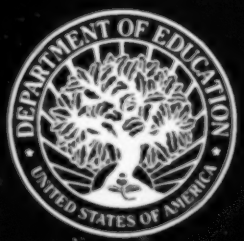

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